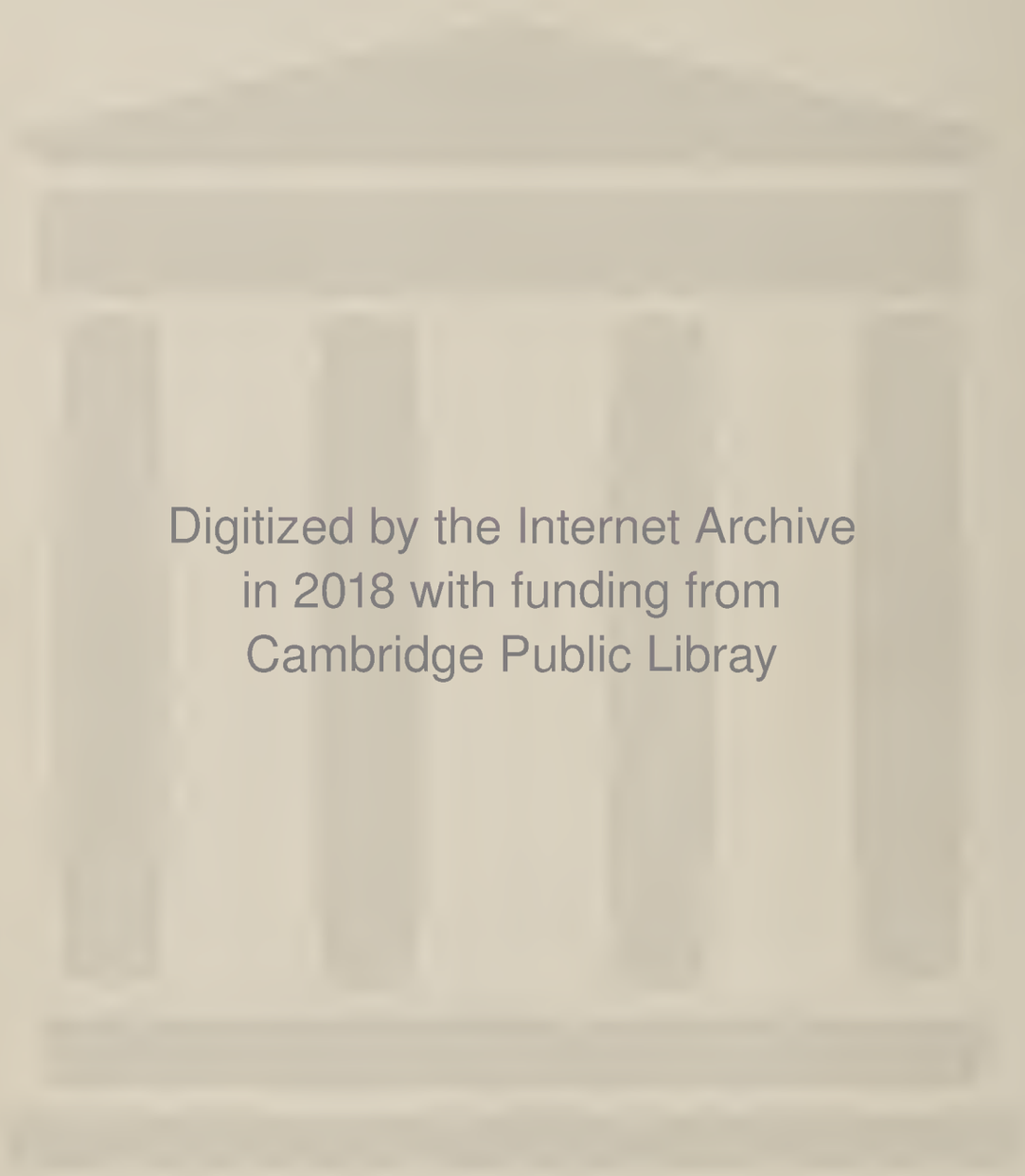

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City of Cambridge.

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THE

MAYOR'S ADDRESS

AT THE

Organization of the City Government,

AND THE

ANNUAL REPORTS

MADE TO THE CITY COUNCIL.

CAMBRIDGE:
UNIVERSITY PRESS, JOHN WILSON AND SON.
1880.

City of Cambridge.

In Common Council, Dec. 3, 1879.

Ordered, That the Committee on Printing be authorized and instructed to obtain proposals, and to make a contract, for the printing of fifteen hundred copies of the Annual Report of the Committee on Finance to be made in December, 1879, with the accompanying documents, and such other documents as shall be ordered to be printed, together with the inaugural address of the Mayor elect; said documents to be printed under the supervision of the City Clerk, and under the direction of the Committee on Printing, and the same to be for general distribution.

The proposals and contract aforesaid to include all the documents ordered to be printed, whether bound together or separately. The expense of such printing to be charged to the appropriation for stationery and printing.

A true copy of the Order as adopted by the City Council, and approved by the Mayor, Dec. 9, 1879.

Attest: JUSTIN A. JACOBS,

City Clerk.

ADDRESS

OF

HON. JAMES M. W. HALL,

MAYOR.

Gentlemen of the City Council: —

In accepting the important trust which has been committed to our care for this year, it is necessary for us to realize, so far as possible, what that trust is, and, by a careful study of the relations of the present to the past year, become thereby better fitted to discharge our duties.

The dark financial cloud which brooded over our country so long — depressing values of all kinds to an incalculable degree, prostrating every commercial enterprise, and well-nigh wrecking all hope of recovery — had produced such a state of uncertainty that no correct or satisfactory basis of valuation could be reached; and it was a most unenviable position to engineer a city's finances, with so little light to guide and so much inclination to criticise.

Under all these depressing circumstances, the results of the last year must be eminently satisfactory. With no increase of our city debt; no bond of any kind authorized or issued (which has not been the case, I believe, until now, since 1855); our expenses all met from our receipts; appro-

priations reduced in nearly every department; taxes one dollar per thousand less than the year previous; and nearly sixty thousand dollars in the treasury to commence the new year with, — this is a record that the last City Council and all our citizens are to be congratulated on; and I need not add, it is an example for us, well worthy of imitation, so far as possible.

Toward the close of the last year, a change came over the commercial world, commencing in this country. With immense crops and a restored currency in our own land, enterprises that had long remained dormant sprang into activity; manufactories that had been silent opened with new life; confidence in commercial enterprises was restored in a great measure; capital, so long withheld, began to flow in its regular and legitimate channels of trade; and the new year opens with prospects quite as encouraging as those of last year were discouraging.

There has already come a large appreciation in personal property, and real estate is beginning to feel the effect of this improvement.

As with depreciation in values economy is apt to follow, so with a rise in values extravagance is likely to result. It is this we need to guard against; and while we are to distinguish between a judicious and necessary expenditure and an injudicious economy (which may, if carried to extremes, prove to be one of the worst forms of extravagance), yet care will require constant exercise to decide what are necessities and what are luxuries.

The different departments of the city, it can safely be said, were managed on a minimum scale of prices last year. This was an advantage that you are not likely to have.

The material advance in merchandise of all descriptions, and which seems likely to continue, will, of necessity, cause an increased expenditure in nearly every department of our city the ensuing year.

You can to a certain extent, perhaps, overcome this, by a rigid watchfulness over each department, and on *no account* permitting any unnecessary or unwise expense.

To accomplish this, your careful and judicious attention to committee work will be a prime requisite; and it will also be essential that unity prevail in all matters affecting the welfare of our city. Only in these ways can the present high credit and general attractiveness of the city be maintained, and we feel satisfied that we are fulfilling our trust.

That we may have a more definite idea of our condition, allow me to call your careful attention to the financial exhibit.

FUNDED DEBT.

The gross city debt, not including water loan, and which has been and is to be covered by general taxation, stood as follows, Nov. 30, 1878 and 1879: —

	1878.	1879.
City Bonds	$3,269,000	$3,254,000

The difference is in city bonds to the amount of $15,000, which matured during the year, and were paid from the Sinking Fund. No bonds will mature during this year.

The water debt, which the city is liable for, is a distinct loan, having a separate sinking fund, held by trustees, and

provided for out of the water rates, and not, as the city debt, from the general tax levy. It is really an investment, and should not, I think, be regarded in the same light as streets, sewers, and kindred municipal loans. The contingency that would throw a portion of the water tax into the general tax would be, when the receipts from water rates do not cover expenses, and the amount required to be paid to the Trustees of the Sinking Fund of the Water Works. The deficit must then be met by a general tax.

This debt, which is all funded, and represented by our city bonds, stood, Nov. 30, 1879, $1,528,700. This is the same as the previous year.

The two debts, and the means to pay them, were as follows, Nov. 30, 1879: —

	City Debt.	Water Loan.		Total.
City Bonds	$3,254,000.00	$1,528,700.00	=	$4,782,700.00
*From these amounts deduct:				
Funds held by Commissioners of Sinking Funds . .	1,025,508.61			
Funds held by Trustees of Sinking Fund Cambridge Water Works	. . . .	353,468.02		
Net liabilities on bonded indebtedness	$2,228,491.39	$1,175,231.98	=	$3,403,723.37

SINKING FUNDS.

Compared with Nov. 30, 1878, the increase of sinking funds to pay the bonded debts is as follows: —

	City Debt.	Water Loan.	Total.
Nov. 30, 1879	$1,025,508.61	$353,468.02	$1,378,976.63
Nov. 30, 1878	828,699.05	291,955.46	1,120,654.51
Increase over 1878 . .	$196,809.56	$61,512.56	$258,322.12

* I have not included cash in treasury, as these bonds are to be paid from sinking funds.

The amounts now held by the Commissioners and Trustees of both sinking funds for the extinguishment of bonds at maturity have reached so large a sum ($1,378,976.63), that with accumulated interest and the amounts to be paid this year, there will be enough to more than liquidate all bonds maturing up to the year 1885, — $1,612,200.

It is a matter of interest, in a double sense, to note, in this connection, that of the $3,254,000 outstanding city-debt bonds, over one-half (or $1,681,000) mature between now and 1886; while of the $1,528,700 water bonds all but $105,000 mature *after* that time. This is owing to the fact that, except for water and sewer loans, municipal bonds cannot exceed ten years.

FLOATING DEBT.

The other liabilities of the city, or what may be called the floating indebtedness, and the means for paying it, stood as follows at the close of our last fiscal year, Nov. 30, 1879: —

LIABILITIES.

State Tax (due December)	$17,385.00
County Tax (due December)	25,116.52
One quarter of license fees due the State for 1879 . . .	3,876.50
	$46,378.02
Part of Trust Funds, as below	6,000.00
	$52,378.02

ASSETS.

Cash in Treasury (less bills approved but not paid)	$58,882.07
Bills receivable, secured by mortgage on real estate	5,231.00
Balance due from the Commonwealth for State and Military Aid, Corporation and National Bank Taxes	65,152.28
Surrendered estates	181,419.91
City lands	79,083.00
Uncollected water-bills	3,019.19
Uncollected taxes, sewer, grading, and nuisance assessments, 1874 to 1879	211,905.20
Miscellaneous bills, mostly tuition for non-resident pupils, gravel sold, and damage to public property	588.72
Total assets	$605,281.37

There are trust funds as follows: —

Dowse Institute Fund	$10,000.00
Sanders Temperance Fund	10,000.00
	$20,000.00

Also,

Daniel White Charity Fund	$5,000.00
Cambridge Public Library (Fay Fund)	1,000.00
	$6,000.00

The first two ($20,000) are legacies, or perpetual loans, and no liability exists except for annual interest, so that I have not called them liabilities.

The last two ($6,000) are demand loans; and while they may never be called for, so long as interest on them is paid, still they are liable to be called for, as the city notes on demand have been given for them.

The reason why these trust funds are in one sense direct liabilities, is because the city invested them by a deposit in the city treasury in past years, and they stand relatively as if a

man held trust property and invested it by using the amount in his business.

Among the assets will be seen uncollected taxes, &c., — $211,905.20. Nearly one-third of this must be considered uncollectible. The remainder should at some time come into the treasury.

The city lands have been estimated at their fair market value to-day, and are available, as will be noticed in another part of this address.

VALUATION.

The total valuations, real and personal, have varied from $66,623,014, in 1875 (the maximum ever reached), to $49,238,098, in 1879, — a decline of $17,384,916.

It can be seen at a glance that this enormous reduction accounts largely for the continued high rate of taxation. There is every reason to anticipate an increased valuation this year over the last, which is also likely to continue, and hence will materially assist in reducing the rate of taxation, which we may properly expect will be lessened gradually each year as our debt is paid.

TEMPORARY LOANS.

During the year, and prior to October 10, when city taxes are due, temporary loans are necessary, in anticipation of tax receipts, to meet ordinary running expenses.

The total temporary loans in 1879 were $352,000, and all of these were negotiated at very low rates of interest, averaging within a fraction of $3\frac{3}{8}$ per cent, and in one instance at the rate of $2\frac{99}{100}$ per cent, the lowest rate at which money was ever secured by the city, so far as I learn.

The present increased demand and higher rates for money indicate that you may not be able to arrange loans on so favorable terms this year. But the fact stated is interesting, as showing the high credit of our city, while at the same time indicating a very easy money market.

APPROPRIATIONS.

The appropriations for 1879 were	$1,179,155.00
Of this there was expended	1,144,428.02
Leaving unexpended balance	$34,726.98

Aside from the interest on the debt, and amount required by statute and ordinance to be paid into the sinking funds, the tax for *current and all other expenses* was only $9 per thousand on the valuation. That which has been the watchword the last three years, "No increase of our city debt," should be adhered to by us.

For further and complete financial statistics I refer you to the Auditor's Report. I have abstained from giving many figures in connection with the debt statement, lest they might confuse the simple idea I wished to present, — how much does the city owe, the nature of the debts, and what have we to pay them with?

WATER WORKS.

Total receipts from water rates, fines, &c.	$171,508.68
Total expenses covered by above	167,231.66
Net revenue	$4,277.02

The construction account goes into the general tax, and is not included in the above; being on the same basis, as regards taxation, as any other public property constructed.

During the year, the water rates were reduced, to take effect July 1, 1880. This reduction amounts to $2 on the first faucet used by one family, and for each additional family using the same faucet, $1, below former rates. This will afford some relief to people of moderate means, and transpose the rates where they can be better borne.

The reduction in receipts from water rates, in consequence of this change, based on fixtures now in use, will amount to $16,585.50.

To partially offset this, the hydrant rates have been raised $19 each, or from $11 to $30, their former tax. There are 575 hydrants; and this will supply $10,925 of the estimated reduction, so far as water-works account is concerned.

It is certain, however, that an increased consumption of water will assist in relieving the hydrant rates, which go into the general tax.

WATER SUPPLY.

The special committee, appointed by the City Council of 1878, — consisting of the Mayor, President of the Common Council, President of the Water Board, City Solicitor, City Physician, and City Engineer, — to investigate and report upon the sources of pollution of our water supply, and what remedies should be adopted, have, within a few days, made their report.

Acting under the authority conferred upon them, experts were employed, — Mr. E. S. Chesbrough, of Chicago, and Professor E. S. Wood, of this city, eminent authorities. The results of their investigations have been awaited with great interest, and the information given must be of large value.

The subject being one that interests every family in this city, your most careful attention should be given to their report.

The very recent publication of the report renders it quite impossible to refer to it in the way of definite suggestion. I am pleased to be able to state, however, from a somewhat hasty perusal, that no alarm need exist at present regarding the purity of Fresh Pond water. The quotations I make hereafter from the report are sufficiently positive on this point to allay any fears already excited.

But the action already taken, in response to a petition of a large number of our citizens, is very timely and judicious. *It is the assurance that the water is to be kept pure that is needed.* We have time now to attend to this before pollution reaches the sources of supply, and so prevent that hasty and often unwise legislation which springs from well-grounded public alarm, and the consequent necessity for immature action.

A very important step recommended is the annexation of a portion of Belmont, to give our city a police jurisdiction around the Pond, and supervision of the territory by our Board of Health. A petition for this has already been presented to the Legislature of 1880, and it is to be expected that the health and welfare of a large city, as Cambridge is, will, with the report of the eminent authority on this matter, be of themselves sufficient argument to secure favorable action on the petition presented.

The general idea of the report on this point may be known from the following extracts: —

"As to the present quality of the water in Fresh Pond, it is satisfactory. There is no evidence from a chemical analysis that it has

changed in any important respect from the time when it was first examined to determine the fitness of the water for household use."

"It is not a question of keeping polluted surface-water from running directly into the pond, but of keeping free from contamination the underground currents. We cannot keep the underground currents from going into the pond. They must be kept pure from polluted matter in solution, because once polluted it is beyond our power to prevent that pollution from reaching the pond."

As regards the idea of purchase of land by the city, the report says: —

"The scheme of purchasing land is so vague and indefinite in its conception, so impracticable in its execution, so costly in its nature, and so uncertain in its probable result, that we deem it extremely unwise for the city to enter upon it."

I commend to your earnest co-operation the *present* duty recommended in the report, which is all that we now have to deal with.

SCHOOLS.

The high rank of our schools continues to be maintained.

One evidence of the estimation in which they are held may be judged from the fact that children from neighboring cities and towns are sent here to be educated, paying tuition from $15 to $50 per year; and the receipts from this source the past year have been nearly $700.

The net cost of our schools the past year, ending November 30, was $161,082.58, or $6,282.26 less than the year previous. During the year, a different grade of salaries was arranged by the School Committee, at an estimated saving of $6,500 annually.

Of the amount expended before named, $132,570.49 was the cost of instruction, including salaries of teachers,

superintendent, and truant officers. The decrease from last year (same items included) is $3,620.71. The number of pupils was 7,480, an increase of 57 over last year. The number of teachers is the same as last year, 173. The Gore Primary School in Ward Three is reported as overcrowded; and should the number of scholars increase, additional accommodation will soon be required. There is an unfinished story in this building, which, if necessity requires, can be completed at a cost of $2,500 to $3,000.

Beyond this, it is not likely that any considerable extra outlay will be required the coming year.

The new sanitarium built the past year in connection with the Shepard Grammar School is very satisfactory, and was much needed. The health of the school children has been unusually good the past year.

One of the pleasant evidences of returning prosperity is the increasing number of pupils at our schools.

Our city is to be congratulated on the election of two ladies to the Board of School Committee. The benefit of such a change very few will doubt; and the high character and ability of the ladies chosen is sufficient guaranty that a step in the right direction has been taken, and is to be of great service in the physical and intellectual training of our youth.

FIRE DEPARTMENT.

From the annual report of the Chief Engineer we learn that the Department, as a general thing, is in good working condition. The total expense of this branch of our service during 1879 was $51,664.62, which is $8,275.11 less than

the preceding year. The force at present consists of ninety-six men. By a change in the city ordinances, made during the last year, there are now three instead of four assistant engineers, as formerly, and the efficiency of the force has not been impaired apparently by this change.

The whole number of fires and alarms during the year was seventy-nine, resulting in losses aggregating $70,419.24, on which insurance was paid to the amount of $66,313.63.

There are at present in use by the Department 11,850 feet of hose, of which 7,750 feet are of leather; the remainder is cotton, rubber-lined, which is coming into general use throughout the country, being more pliable and durable than leather. To provide for the leather hose, which is to a considerable extent defective and unreliable, an order was recently passed by the City Council for the purchase of 3,000 feet more of cotton hose, which has been arranged for on very satisfactory terms, and some old leather hose disposed of as part payment.

Relief valves have been placed on trial upon two engines, to prevent unnecessary use of water at fires, and excessive damage thereby. This is an important point to be reached, and it is to be hoped that the experiments may prove successful. Additional hook-and-ladder protection seems to be called for from Wards One and Five, and should be looked into carefully the coming year. Ward Five and portions of Ward One are certainly not protected as they should be in this direction. If any change can be made, without exposing other property too much in proportion, it should be considered by you.

The immunity from serious conflagration during the year, and the excellent and economical management of the Department, are causes for congratulations.

POLICE.

The expenses of this Department in 1879 were $56,514.38, or $8,881.28 less than the year previous, mostly resulting from reduced salaries.

The force at present consists of sixty men; the discipline is reported as good, and the station-houses and lock-ups in excellent order.

During the year, one mounted patrol has been employed for about three months; and the value of this service is so evident, especially in the Summer, when so many families are absent, that I recommend an increase in the number, at least for a portion of the year.

The number of patrolmen, in proportion to our population, renders it imperative that *every man* on the force should be capable and energetic. By our rules and regulations, patrolmen are dropped from the force on reaching the age of sixty, and no after-provision is made for them. After an officer has served the city faithfully for a score of years or more, and reached an age when he would naturally be unfitted for very active employment, it seems wrong to discharge him, and make no provision whatever for his few remaining years of service. I suggest consideration of the propriety of action in this direction which, while not involving extraordinary expense, may provide work in some department for such cases. I am confident that the reluctance which now exists to make changes in the force, even when the welfare of the city seems to demand it, would then be to a great extent removed; and I am sure that our citizens will approve of such a plan. As

the security and good order of our community and the welare of our homes are so closely identified with an efficient and well-regulated police force, their strict and diligent attention to duty and to a proper enforcement of the laws must be regarded as a necessity of prime importance.

STREETS.

No new streets were laid out last year. Three short streets, Waverley and Talbot in Ward Four, and Harris in Ward Five, were accepted. As a general thing, our roads are in good condition.

The temporizing policy adopted with regard to our main thoroughfares leading from West Boston and Craigie Bridges has proved, I think, the most expensive, although advisable, perhaps, for the past few years. These avenues should be paved with stone blocks, and not macadamized, owing to the heavy teaming that they are subjected to, and the soft nature of the road-beds.

Nothing will need to be done in this direction the coming year, as with extensive repairs the last year they are now in good order, from the bridges to Central and Inman Squares. But I give it as a fact to be kept in mind, obtained from the Superintendent of Streets, that stone pavement lasts eight to ten times as long as macadamized road, and costs but three times as much.

A purchase has recently been made of a gravel bank in Watertown, on very favorable terms, and of a superior quality. The price agreed to is eighty-five cents per cubic yard, delivered in quantities, and at such times and places as the Superintendent of Streets may direct. The city requires annually some seventeen thousand cubic yards, and

the gravel purchased will probably be sufficient for the next six years. The price paid is considered as low by good judges.

The total expenses the last year for construction, paving, and repairs were $61,495.16, or $8,498.30 less than the year previous. Probably this department can be carried on this year at an expense not materially different from last year.

It should ever be remembered that avenues kept in good order attract residents, and a reasonable outlay is a good investment for any city.

BRIDGES.

No extensive repairs have been made the past year, — only the Sixth Street Bridge having been re-planked, at an expense of about $500.

The bridges are in good order in the main. Brookline Bridge will need partial, and Third Street Bridge entire, re-planking this year. The total cost last year was $2,639.73. The Superintendent of Streets estimates that $3,500 will be required this year.

West Boston, Canal, and Prison Point Bridges are in good order, as per Commissioner's report. The amount chargeable to our city for care and maintenance the last year was $6,518.77.

SURRENDERED ESTATES.

The entire cost, to Nov. 30, 1879, was $181,419.91, as entered. There should be added to this, entered since but paid before Nov. 30, 1879, to J. Stacey Read and E. H. Luke, $13,811.79, making a total of $195,231.70.

Two estates remain unsettled, in one of which judgment has already been rendered. With these, the long and unprofitable list will close. The receipts from this large outlay have about paid the cost of keeping, so far. In 1879 the receipts were $3,375.34; expenses, $3,082.56.

The city should dispose of this property as soon as it can be done at a fair valuation. The depression of the last few years has rendered this impossible. Now that the prospect is more promising, the property should be offered on such favorable terms of payment as may lead to a disposition of it gradually.

CITY LANDS.

These have not been considered before as assets. The city own available lands to the value of $79,000, a large portion being redeemed marsh lands, and these can probably, before long, be sold at a large advance on the cost, being near railroad and tide-water privileges.

I recommend that such arrangements be made, as shall enable the agent having charge of surrendered estates to take prompt advantage of any favorable offers that may be made for salable city real estate. A favorable sale is sometimes lost through too much delay in conferring with committees.

ALMSHOUSE AND OVERSEERS OF THE POOR.

The best comment on this department that can be made is an extract from a letter addressed to Hon. Ezra Parmenter, by the agent of the Sick State Poor. He says:—

"The splendid results in the way of reform accomplished by your Board of Overseers in so brief a time have not been equalled in the State in my twenty-one years of public service. I can truly say that the management in Cambridge, from being the very worst in the State, has come to be surpassed by that of no city or town."

Such testimony is gratifying, especially as our poor never had better or more prompt care; and from personal visitation I can testify to the contentment and cleanliness of and excellent attention to the inmates of our "home for the poor." The school connected with it is under the care of a very capable and faithful teacher.

The Overseers of the Poor have brought their department to what seems a perfect system, and by a careful attention to the laws of settlement have thrown upon other cities and towns their part of the expenses incurred to maintain *their* poor within our limits, of which formerly our city assumed the whole.

The net expenses for care and maintenance of the poor during the year, to Nov. 30, 1879, were $25,356.19, which is $3,749.55 less than 1878. The amount named above does not include collecting house-offal, or repairs at almshouse.

A difference between the Auditor's report and that of the Overseers of the Poor arises from the fact that the Overseers' includes only such items as relate directly to the care and maintenance of the poor; and also that the November bills approved by the Overseers do not reach the Auditor for entry until after the accounts for the financial year are closed, and hence they appear in the following year's accounts.

CITY PHYSICIAN.

By a recent change in our ordinances, the duties of the City Physician are enlarged; and the assistance which, since 1874, has been rendered the sick poor by the Cambridge Dispensary, and to the support of which the city has contributed $1,000 annually, will hereafter, so far as the city is concerned, be afforded by the City Physician, under the direction of the Overseers of the Poor. This will enable our city to collect from other cities and towns, and the State, the cost of assistance rendered those having no settlement here, which we have been unable to do thus far. This will be a relief to the city, while at the same time it will in no way prevent the poor from receiving prompt medical attention.

The system has been in operation in other cities, and is commended by the agent of the Sick State Poor. The salary is not to exceed $1,000 per annum, and the office will combine the city and almshouse physicians, and all ordinary medical attendance required by the city in its various departments. The saving to the city will probably be $800 to $1,000 per annum. The physician is to be chosen as before, for three years.

LAMPS.

The cost of lighting streets for the year was $18,755.61, which is $1,067.12 less than the year previous. The cost per lamp was $23. The number of lamps in the city is 814, of which 73 are kerosene; 9 lamps have been added the past year.

Many of our cross streets are so dark, on account of the lights on them being extinguished after 12 o'clock, that I suggest whether it is not advisable to grant more privileges in this direction. I can see no good reason why citizens residing on cross streets well built upon, and paying their share of the expenses of the city, should not have the same privileges and protection as others residing on main avenues.

During the year, 100 of Robinson's patent street-lamp reflectors have been placed in the lamps on several streets. These reflectors, it is claimed, save 25 per cent in the gas consumed, and cost $1.75 each, and seem to meet with the general approval of our citizens.

PUBLIC LIBRARY.

During the year, the name of our public library was appropriately changed from "Dana Library" to "Cambridge Public Library," which will give a better idea of what it is. This valuable department has been well patronized, and is under excellent management.

In the year 1874 this was made a free library to all residents of fourteen years of age and upwards. The result has been that from 12,566 books used in 1873, 87,277 were used in 1879. This is a decrease of 3,170 from 1878. The average daily use was 285.

The expenses were $5,993.12, of which $1,217.51 was spent for books, magazines, and papers. One thousand and eleven volumes were added to the Library by purchase and gift. The total number of books is now 11,934.

ASSESSORS' DEPARTMENT.

The importance of this Department can hardly be over-estimated. It is really the main-spring of the financial welfare of the city, and it is to be hoped that the point suggested by my predecessor, of the necessity of more unity in the workings of this Board, may this year be developed. Certainly the vital interests of the city demand this; and independent action of the Assessors can neither benefit them nor the public welfare.

The last Legislature submitted to our citizens an act transferring the election of Assessors to the City Council. This was defeated at our last Fall election. It is a question whether the evil sought to be remedied by this change would have been thus overcome. This Department is on an entirely different basis from that of Overseers of the Poor, in which this same change was made two years since, and with excellent results.

With the re-survey of the entire city by the City Surveyor, giving the Assessors the location and dimensions of each lot, a great assistance will be rendered them. Considerable progress has been made in this direction, — a number of the sections having been already completed, and the remainder are well under way.

No good reason exists why harmony, unity, and thorough system should not hereafter characterize the Assessors' Department, and thus give no occasion for criticism.

SEWERS.

The expenses for construction and maintenance of sewers the last year were: —

Sewers, construction	$4,968.07
Sewers, maintenance	2,842.59
Total	$7,810.63

Four new sewers have been constructed during the year; one of them (the Fort Washington sewer) a trunk sewer, which will drain a district of nearly sixty-six acres. There is little probability of any very large amount being required for construction the coming year, unless sewerage should seem to be necessary for the district bordering Cogswell Avenue, Ward Five. A portion of the Jay Street sewer in Ward Four, a thirty-six inch brick sewer, constructed in 1874, has been found to have collapsed, and will probably require to be rebuilt for a distance of seven to eight hundred feet. This is one of the unfortunate results of sewers improperly built, and it is to be hoped that few such cases will arise in the future. The probable cost of this will be some four or five thousand dollars.

The care and repair of sewers and cleaning catch-basins will probably be about the same as last year.

During the year, the sewer ordinance was revised, and what is known as the "Whitney sewer-assessment plan" was adopted. It is probable that this is the most thorough report ever made on this subject to the City Council; and I take pleasure in mentioning the great indebtedness of the city to the able chairman of the Sewer Committee for his

exhaustive report, which must ever prove of great value to our city.

By this plan of a division of the city into sewerage areas a more equitable basis of assessment has been adopted, and our city will be relieved of the very onerous percentage of expense which has too often been borne by it.

The consideration of our water supply will involve the matter of Alewife Brook and Cushing Street district sewerage, and the report of the Committee which I referred to should be studied by you in this connection, as the information given will be of invaluable service, in considering the danger of pollution of Fresh Pond water. This is one of the most important matters that will come up for your consideration this year.

GENERAL REMARKS.

The last Legislature repealed the former law, and passed a new one, regarding aid to indigent soldiers and sailors having no pensions.

The law, as it now stands, is essentially the same as the law in relation to aid given by Overseers of the Poor, except the important distinction that it is "military aid" and not "pauper aid," and the State reimburses one-half of the sum so paid. The old law in regard to payment of State aid proper to those having pensions is still in force.

The health of our city has been unusually good the last year, and no serious epidemic has prevailed, for which and all our many blessings our heart-felt thanks are due to the Great Giver of every good gift.

The different departments under the supervision of the City Council are managed in an honest, satisfactory, and business-like manner, and it should be our aim to see that they continue so.

One of the most perplexing questions that the Board of Aldermen has to decide is that of liquor licenses, as the evils of intemperance can hardly be exaggerated. I shall be glad to unite in any action tending to lessen this great evil.

The reports of the Chief of Police show a continued reduction in the number of arrests for drunkenness, — 492 for the year ending Nov. 30, 1879, or six less than the year previous. The order and quiet of our city, and the few persons now seen under the influence of liquor on our streets, seem to be reasonable proof that the license law, faithfully enforced, is the best, *for present circumstances.* It is evident that a large majority of our citizens so regard it.

So long as the law remains upon the statute-books, and the neighboring metropolis grants licenses, we can hardly expect to prevent the use and sale of liquor within our own limits. Recognizing this, it should be our endeavor, in granting licenses, to see that while it is done under legal sanction, yet each licensee shall understand clearly, by a statement on the license, what privileges have been granted and paid for, and that he is expected and will be required to strictly conform to the agreements, and that any violation of them will result in a revocation of the license. If there is a frank, distinct understanding at the outset, and the avoidance of any chicanery on the part of the city to tempt men to break their licenses, there can be no proper complaint for rescinding promptly any license the condi-

tions of which have not been complied with by the licensee.

It will be my endeavor, and I ask your co-operation, to see that these views are carried out.

The increased demand for labor the past year leaves very few men out of employment as the new year commences. This is a most encouraging fact, and if we can be enabled to so conduct the affairs of the city as to hasten the day when low rates of taxation shall fill all our unoccupied and valuable water-front with busy manufactories, and our avenues with homes, then we shall have protected and encouraged labor and capital, and eventually shall have the satisfaction of seeing that result to which we contributed, — the ideal government, — that which, conducted honestly and judiciously, gives the most privileges to its citizens, at a minimum rate of taxation.

Gentlemen, as we stand on the threshold of the new year, it is fitting that we pause to think for a moment of the history to which we shall add our page.

Few cities in our country — I can perhaps say, no other city — have been so long and intimately identified with the religious, educational, and civil interests of our land as Cambridge. The record is one that her citizens may well be proud of.

In the old Colonial records, it is stated that the first Governor, Deputy-Governor, and their assistants, after viewing the spot where our city now stands, "all agreed it a fit place for a beautiful town." We must regard this as additional proof of the wisdom of our ancestors. The good government which they established, and which we inherit, was eminently characterized by their constant recognition

of their dependence upon Divine wisdom for daily guidance. As we accept our trust, let the same spirit actuate our deliberations, and let us transmit unsullied the record we receive and write upon. So shall the possibilities of the year, now so favorable, become grander and nobler as they are formed by us into realities.

REPORT

OF THE

COMMITTEE ON FINANCE.

THE Joint Standing Committee on Finance for the municipal year ending Dec. 31, 1879, herewith presents its final

REPORT.

Your committee entered upon its duties with an earnest desire to keep the city expenditures within the limits established by the City Councils of the two preceding years, and to effect such further reductions as were not inconsistent with the proper maintenance of the various municipal departments. The hearty co-operation of the City Council has more than enabled your committee to realize its hopes in this regard.

The current expenses of the city, as shown by the appropriation account, were —

1878	$1,207,635.70
1879	1,114,438.02
Showing a reduction of	$63,207.68

in 1879 from the amount expended in the previous year.

The amount borrowed on temporary loans, in anticipation of the receipts from taxes, was —

1878	$445,000
1879	352,000
Making a difference of	$93,000

in favor of the year 1879, and thus saving to the city a large sum in interest.

The cash balance in the hands of the Treasurer, as per Auditor's account, was, at the close of business —

November 30, 1879	$58,882.07
November 30, 1878	31,634.47
Increase in 1879 over previous year . . .	$27,247.60

In accordance with the requirements of the city ordinance, your committee met in the office of the Treasurer at the close of business on the 30th of November, and made a full examination of the state of his cash. The amount was found to agree with the balance as shown upon his cash book, namely, $61,305.57.

The difference between this balance and that shown on the Auditor's books may be found fully explained in his report.

The committee has also carefully examined the cash and accounts of the City Treasurer, in accordance with the plan adopted at the close of the last year, (as explained in the city document of 1878, pages 26 and 27,) and find them correct, their accuracy having been verified from the books of the Auditor of Accounts.

A part of the duty of this committee has consisted of the closing of the accounts of Mr. Joseph Whitney, the late Collector of Taxes. Having completed the work of collecting such taxes and assessments as had been committed to him upon warrants dated prior to Jan. 1, 1878, Mr. Whitney petitioned to be relieved from the further collection of such taxes and assessments. The Committee on Finance was thereupon authorized to employ an expert to examine the books of the late collector, and accordingly employed Mr. Henry A. Piper, a competent accountant, who made an exhaustive examination of the books of Mr. Whitney, beginning at Dec. 1, 1877, the point up to which a similar examination was made at the close of the year named. Mr. Piper's report showed that, of the collections made by Mr. Whitney and the cash received by him, the whole amount has been duly paid into the City Treasury. All the assessments for filling to grade were collected or otherwise legally disposed of, except one that was deemed invalid. Of the uncollected sewer assessments upon Mr. Whitney's warrants, the amount was $173.77, of which amount $7.86 was subsequently abated, leav-

ing the sum of $165.91, which, being considered collectible, was transferred upon a new warrant to the present City Treasurer.

Your committee also caused a schedule to be made of the unpaid poll, personal, and real-estate taxes from 1866 to 1877 inclusive, which is as follows: —

Years.	Polls.	Personal.	Real Estate.
For the year 1866 . . .	$1,698.00	$926.64	$14.52
„ 1867 . . .	1,370.00	1,047.28	98.80
„ 1868 . . .	2,050.00	583.84	279.15
„ 1869 . . .	2,869.00	595.00	176.20
„ 1870 . . .	2,410.00	376.60	141.40
„ 1871 . . .	3,516.00	315.12	51.48
„ 1872 . . .	3,920.00	649.20	159.02
„ 1873 . . .	5,206.00	341.55	58.05
„ 1874 . . .	5,302.00	795.00	113.75
„ 1875 . . .	4,984.00	1,560.00	30.88
„ 1876 . . .	4,664.00	1,815.00	54.40
„ 1877 . . .	5,784.00	1,038.28	43.00
Totals	$43,777.00	$10,043.56	$1,220.65

RECAPITULATION.

Polls	$43,777.00
Personal	10,043.56
Real	1,220.65
Total	$55,041.21

A thorough investigation of the individual cases making up this list shows that all proper efforts had been made to collect these taxes, and that it was not the fault of the collector that they were not duly collected. A large part of them were illegal, and many of the persons assessed could not be found.

Under advice of the City Solicitor, your committee recommended that these taxes be abated, and that Mr. Whitney be released from the further collection of taxes and assessments on warrants heretofore committed to him; and an order to that effect was adopted by the City Council. His liability to the City

upon such warrants has therefore ceased, and his accounts are closed.

In the report of this committee for the preceding year, reference was made to certain tax-deeds in possession of the City Treasurer, the same representing a large amount of unpaid taxes. These deeds relate to property sold by the collector for taxes and assessments of all kinds. Under the requirements of chap. 266 of the acts of 1878, the City is obliged to advertise and sell all such estates sold for taxes and assessments as shall be unredeemed after two years from the date of sale by the collector. In pursuance of the act above named an order was adopted, directing the City Treasurer to advertise and sell, under the direction of this committee, such estates as came within the provisions of the law of 1878. A list of the same was therefore advertised for sale, the amount of taxes and interest due thereon being $16,836.03, of which about $12,000 were collected prior to the date of sale, and nearly the whole amount finally realized by the City.

Of the city valuation, the following comparative tables are compiled from the assessor's books for the years 1878 and 1879.

Polls and Valuation of Estates in 1879.

Wards.	Polls.	Personal.	Real Estate.	Total.	Dwellings.
Ward 1 . .	1,968	$5,035,045	$10,401,200	$15,436,245	1,500
„ 2 . .	3,301	3,154,900	9,658,200	12,813,100	2,304
„ 3 . .	2,480	1,373,753	5,636,200	7,009,953	1,363
„ 4 . .	2,938	1,446,500	7,009,700	8,456,200	2,044
„ 5 . .	1,205	882,700	4,639,900	5,522,600	926
Total.	11,892	$11,892,898	$37,345,200	$49,238,098	8,137

Polls and Valuation of Estates in 1878.

Wards.	Polls.	Personal.	Real Estate.	Total.	Dwellings.
Ward 1 . .	1,826	$4,581,700	$9,858,900	$14,440,600	1,489
„ 2 . .	3,268	3,592,020	9,929,300	13,521,320	2,261
„ 3 . .	2,452	1,562,920	5,887,400	7,450,320	1,363
„ 4 . .	2,808	1,521,600	7,259,500	8,781,100	1,997
„ 5 . .	1,202	809,200	4,612,600	5,421,800	927
Total.	11,556	$12,067,440	$37,547,700	$49,615,140	8,037

By the foregoing it appears that the total valuation of real and personal estate in this city was —

1878	$49,615,140
1879	49,238,098
Decrease in 1879	$377,042

The total amount assessed upon these valuations and poll taxes was —

1878	$901,886.52
1879	860,831.68
Decrease of taxation in 1879	$41,054.84

The rate of taxation in 1879 was $17.00 per $1000. This was an actual reduction of $1.00 per $1000 upon the rate established for the previous year. To such as availed themselves of the customary discount upon taxes paid on or before October 10, the net rate was $16.32 per $1000.

Your committee cannot refrain from congratulating the City Council at the present improved condition of the city finances, a result which must be highly gratifying to all our citizens.

In conclusion, your committee desires to bear testimony to the merits of the faithful and competent officers more immediately in charge of the financial department of the city; namely, the Treasurer and Auditor of Accounts. Their knowledge of the system of keeping accounts now in use, and their unfailing spirit of accommodation, has made the necessary business intercourse with them at all times agreeable.

Respectfully submitted,

SAM'L. L. MONTAGUE,
M. L. SMITH,
JAMES M. W. HALL,
GEO. S. SAUNDERS,
EDWARD T. NICHOLS,
NATHAN G. GOOCH,

Committee on Finance.

ANNUAL REPORT

OF

THE AUDITOR OF ACCOUNTS.

To the Honorable City Council: —

AGREEABLY to the requirements of Section 4 of an "Ordinance in Relation to Accounts and Finance," the undersigned herewith submits his Second Annual Report of the financial condition of the city, embracing the period from December 1, 1878, to November 30, 1879, inclusive.

The actual amount of revenue received from all sources (including the temporary loan) during the year is $1,611,866.94, and the actual amount expended for all purposes (including the temporary loan), is $1,584,619.34, showing a balance of $27,247.60, to which amount add $31,634.47, cash on hand Dec. 1, 1878, and the amount in the treasury, Nov. 30, 1879, is shown to be $58,882.07.

The financial year just closed is a remarkable one, from the fact that it has left no legacy in the shape of increased debt as a further burden on our tax-payers, and this, too, with a material decrease in the rate of taxation, and no increase in the valuation.

As one of the results of the more prosperous times, combined with the business-like policy pursued by the collector of taxes, may be noted the increased percentage of taxes and assessments collected the past year as compared with previous years; hence the balances of uncollected taxes and assessments show a large reduction from the previous year's statement, — a portion of this being the result of a thorough examination of the accounts of the late Treasurer and Collector, and the abatement of such portions of the original assessments as, in the judgment of the proper authority, may fairly be considered uncollectible.

Following is a statement of the temporary loan negotiated the past year, showing the dates and amounts of notes and rate of interest paid: —

Jan. 1,	1879	$50,000.00	Interest	$3\frac{1}{2}$ per cent.
„	„	25,000.00	„	$3\frac{1}{2}$ „
„	„	25,000.00	„	$3\frac{1}{2}$ „
„	„	25,000.00	„	$3\frac{1}{2}$ „
„	„	25,000.00	„	$3\frac{1}{2}$ „
„	„	10,000.00	„	$3\frac{1}{2}$ „
Feb. 10,	„	15,000.00	„	$3\frac{1}{4}$ „
„ 11,	„	15,000.00	„	$3\frac{1}{4}$ „
March 8,	„	30,000.00	„	$3\frac{1}{2}$ „
April 2,	„	12,000.00	„	$4\frac{1}{4}$ „
„ 10,	„	10,000.00	„	4 „
May 9,	„	25,000.00	„	$3\frac{1}{4}$ „
„	„	25,000.00	„	$3\frac{1}{4}$ „
„	„	20,000.00	„	$3\frac{1}{4}$ „
August 9,	„	40,000.00	„	$2\frac{99}{100}$ „
		$352,000.00		

These notes were all due and paid Oct. 10, 1879.

THE CITY DEBT.

The *gross* city and water debt, Nov. 30, 1879, as compared with the same debt Nov. 30, 1878, is as follows: —

	1879.	1878.
Funded loan	$3,254,000.00	$3,269,000.00
Funded water loan	1,528,700.00	1,528,700.00
Trust funds	26,000.00	26,000.00
State and county taxes	42,501.52	59,886.52
	$4,851,201.52	$4,883,586.52

Decrease of *gross* debt, Nov. 30, 1879, $32,385.00.

The *net* city and water debt, Nov. 30, 1879, as compared with the same debt Nov. 30, 1878, is as follows: —

	1879.	1878.
Gross debt as above	$4,851,201.52	$4,883,586.52
Less amount of both sinking-funds and cash in treasury	1,437,858.70	1,152,288.98
	$3,413,342.82	$3,731,297.54

Decrease of *net* debt, Nov. 30, 1879, $317,954.72.

The *net* city debt, not including the water debt, as shown Nov. 30, 1879, and Nov. 30, 1878, is as follows: —

	1879.	1878.
Gross city debt	$3,322,501.52	$3,354,886.52
Less amount of sinking-fund and cash in treasury	1,084,390.68	860,333.52
	$2,238,110.84	$2,494,553.00

Decrease of *net* city debt, Nov. 30, 1879, $256,442.16.

The *net* water debt, as shown Nov. 30, 1879, and Nov. 30, 1878, is as follows: —

	1879.	1878.
Gross water debt	$1,528,700.00	$1,528,700.00
Less amount of sinking-fund of water works	353,468.02	291,955.46
	$1,175,231.98	$1,236,744.54

Decrease of *net* water debt, Nov. 30, 1879, $61,512.56.

By the above statements it will be seen that the *net* city and water debt has been reduced during the year from $3,731,297.54, as it stood Nov. 30, 1878, to $3,413,342.82, as it stands Nov. 30, 1879, thus showing a *net* reduction of $317,954.72.

THE FUNDED DEBT.

Following is a statement of the total funded debt of the city, with the dates of maturity and rate of interest thereon: —

Bridge Loan.

Due July 1, 1884,	interest	6	per cent	$94,000	
July 1, 1885,	„	6	„	26,000	
					$120,000

Building Loan.

Due July 1, 1883,	interest	6	per cent	$119,000	
April 1, 1884,	„	6	„	198,000	
July 1, 1885,	„	6	„	17,000	
					334,000

City Loan.

Due July 1, 1881,	interest	6	per cent	$100,000	
Aug. 1, 1882,	„	5	„	30,000	
Sept. 10, 1882,	„	5	„	40,000	
Nov. 20, 1882,	„	5	„	14,000	
July 1, 1886,	„	6	„	100,000	
April 1, 1889,	„	5	„	100,000	
July 1, 1890,	„	6	„	20,000	
Jan. 1, 1893,	„	5	„ (gold)	150,000	
					554,000

Funding Loan.

Due April 1, 1883,	interest	6	per cent	$216,000	
July 1, 1884,	„	6	„	100,000	
July 1, 1885,	„	6	„	24,000	
					340,000

Land Loan.

Due July 1, 1893,	interest	6	per cent	$10,000	
					10,000

Low-Land Loan.

Due July 1, 1882,	interest	6	per cent	$15,000	
July 1, 1883,	„	6	„	270,000	
April 1, 1884,	„	6	„	240,000	
Oct. 1, 1884,	„	6	„	56,000	
July 1, 1885,	„	6	„	122,000	
July 1, 1886,	„	6	„	60,000	
Oct. 1, 1887,	„	5	„	120,000	
					883,000
Amount carried forward					$2,241,000

Amount brought forward						$2,241,000
			Paving Loan.			
Due July 1, 1893,	interest	6	per cent	. .	$100,000	
July 1, 1894,	„	6	„	. .	130,000	
July 1, 1895,	„	6	„	. .	25,000	
						255,000
			Sewer Loan.			
Due Oct. 1, 1895,	interest	6	per cent	. .	$20,000	
July 1, 1896,	„	6	„	. .	29,000	
July 1, 1903,	„	6	„	. .	136,000	
July 1, 1904,	„	6	„	. .	295,000	
July 1, 1905,	„	6	„	. .	144,000	
						624,000
			Street Loan.			
Due July 1, 1893,	interest	6	per cent	. .	$13,000	
						13,000
			Street-widening Loan.			
Due July 1, 1886,	interest	6	per cent	. .	$7,000	
July 1, 1903,	„	6	„	. .	10,000	
July 1, 1904,	„	6	„	. .	90,000	
July 1, 1905,	„	6	„	. .	14,000	
						121,000
			Water Loan.			
Due May 1, 1875,	interest	6	per cent	. .	$200	
July 1, 1881,	„	6	„	. .	50,000	
Aug. 1, 1883,	„	6	„	. .	55,000	
July 2, 1886,	„	6	„	. .	100,000	
April 1, 1887,	„	6	„	. .	150,000	
April 1, 1888,	„	6	„	. .	175,000	
May 1, 1889,	„	6	„	. .	112,000	
July 1, 1890,	„	6	„	. .	60,000	
May 1, 1891,	„	6	„	. .	50,000	
July 1, 1892,	„	6	„	. .	335,000	
April 1, 1894,	„	6	„	. .	150,000	
April 1, 1895,	„	6	„	. .	160,000	
July 1, 1896,	„	6	„	. .	103,000	
July 1, 1897,	„	6	„	. .	16,000	
July 1, 1898,	„	5	„	. .	12,500	
						1,528,700
Total funded debt						$4,782,700

Dates of Maturity — Funded Loan.

Following is a statement of the total funded debt, showing the amount of bonds due and payable each year until all mature: —

1875	$200
1881	150,000
1882	99,000
1883	660,000
1884	688,000
1885	189,000
1886	267,000
1887	270,000
1888	175,000
1889	212,000
1890	80,000
1891	50,000
1892	335,000
1893	273,000
1894	280,000
1895	205,000
1896	132,000
1897	12,500
1898	16,000
1903	146,000
1904	385,000
1905	158,000
	$4,782,700

LIABILITIES AND ASSETS.

The liabilities and assets of the city, Nov. 30, 1879, are classified as follows: —

Liabilities.

Funded loan	$3,254,000.00
„ water loan	1,528,700.00
State tax	17,385.00
National bank tax	5,832.83
Amount carried forward	$4,805,917.83

Amount brought forward	$4,805,917.83
County tax	25,116.52
Trustees Dowse Institute Fund	10,000.00
„ Daniel White Charity Fund	5,000.00
„ Sanders Temperance Fund	10,000.00
„ Cambridge Public Library (Fay Fund)	1,000.00
One-fourth amount of liquor licenses to the State	3,876.50
Total liabilities	$4,860,910.85

Available Assets.[1]

Cash in treasury	$58,882.07
Amount in sinking-funds	1,025,508.61
Amount in sinking-fund of Water Works	353,468.02
Bills receivable, secured by mortgage	5,231.00
Amount of surrendered estates account	181,419.91
City lands	79,083.00
Uncollected taxes, 1874 to 1879 inclusive	141,522.28
„ sewer assessments	390.09
„ grading assessments	29,161.59
„ nuisance assessments	40,831.24
„ State aid of 1878	14,985.87
„ State aid of 1879	11,911.00
„ military aid of 1879	2,768.76
Amount of corporation tax from State	26,133.14
„ of national-bank tax from State	15,186.34
Uncollected water bills	3,019.19
„ miscellaneous bills	588.72
Total available assets	$1,990,090.83
Balance of liabilities over available assets Nov. 30, 1879	$2,870,820.02

[1] Of the amounts appearing on the Auditor's books as assets, the item of uncollected taxes from 1874 to 1877 inclusive, amounting to $37,102.74, and the item of uncollected nuisance assessments, are, by vote of the City Council passed Dec. 20, 1879, quite materially reduced, those being among the amounts for which the late collector of taxes was held responsible, but which are now to be committed by a new warrant to the present collector or abated as uncollectible.

LEDGER BALANCES.

	Dr.	Cr.
Bills receivable	$3,150.00	
City treasury	58,882.07	
City of Cambridge	2,936,030.96	
James Pike	2,081.00	
Taxes, 1874	6,548.09	
„ 1875	7,406.98	
„ 1876	9,385.80	
„ 1877	13,761.87	
„ 1878	9,034.86	
„ 1879	95,352.28	
Surrendered estates (sale account)	181,419.91	
Cemetery Fund		$1,950.00
Water loan		1,516,200.00
Water loan (registered)		12,500.00
Bridge loan		120,000.00
Land loan		10,000.00
Building loan		334,000.00
City loan		554,000.00
Funding loan		340,000.00
Low-land loan		763,000.00
Low-land loan (registered)		120,000.00
Paving loan		255,000.00
Sewer loan		624,000.00
Street widening loan		121,000.00
Street loan		13,000.00
Dowse Institute Fund		10,000.00
Sanders Temperance Fund		10,000.00
Commissioners of sinking-funds	1,025,508.61	
Trustees of sinking-fund of Water Works	353,468.02	
Daniel White Charity Fund		5,000.00
Trustees Cambridge Public Library		1,000.00
Tax lien account	29,474.55	
City lands	79,145.00	
	$4,810,650.00	$4,810,650.00

A detailed statement of the receipts and expenditures of the city; together with the amounts appropriated and the unexpended balances, is given in the following pages.

Respectfully submitted,

SAMUEL E. CHANDLER,
Auditor of Accounts.

AUDITOR'S OFFICE, CITY HALL,
Dec. 27, 1879.

RECEIPTS.[1]

The receipts of the year, as credited to the general city accounts, are shown as follows: —

No.		
1.	Assessment Account	$15,503.34
2.	Bridges (West Boston, Craigie, and Prison Point)	5.50
3.	Cambridge Public Library	2,486.19
4.	Cemeteries	8,897.27
5.	Cemetery Fund	300.00
6.	Fire Department	220.37
7.	Incidental Expenses	23,014.10
8.	Interest	6,275.79
9.	Lighting Streets	30.61
10.	Loan, Temporary	352,000.00
11.	Pauper Department	5,225.94
12.	Pauper Department (Almshouse)	2,266.82
13.	Pauper Department (House Offal)	4,411.20
14.	Pike, James	1,000.00
15.	Police Department	3,334.11
16.	School Department (Salaries)	1,421.33
17.	Sewers (Construction)	8,049.73
18.	Shade-trees and Public Grounds	82.40
19.	Sinking-funds, Commissioners of	15,000.00
20.	State Aid	27,598.97
21.	Street Department (Construction)	852.50
22.	Street Department (Paving)	83.52
23.	Street Department (Repairs)	265.13
24.	Street Department (Watering)	8,594.04
25.	Surrendered Estates	13,141.37
26.	Surrendered Estates (Care and Repair)	3,375.34
27.	Surrendered Estates (Sale Account)	800.00
28.	Tax, Corporation	23,053.02
29.	Tax, National-Bank	16,395.11
30.	Taxes of 1873	211.95
	Amount carried forward	$543,895.65

[1] It will be observed that a difference of $25,746.50 exists between the Treasurer's and Auditor's aggregates of Receipts and Expenditures affecting the "Tax Lien Account" on the side of Expenses; and the "Assessment Account," "Taxes of 1876," and "Taxes of 1877" on the side of Receipts. This is accounted for by this fact: —

In the settlement of the late Collector's accounts, it was found that in all tax-sales of real estate, whereby the city became the purchaser, the tax was not treated as paid, but still remained as an unpaid tax. This account has now been made up to include all such sales; but, as the transaction is not a cash one, the books of the present Treasurer and Collector do not contain the entries as shown on the Auditor's books.

No.		
	Amount brought forward	$543,895.65
31.	Taxes of 1874	647.83
32.	Taxes of 1875	4,116.34
33.	Taxes of 1876	5,545.31
34.	Taxes of 1877	16,187.27
35.	Taxes of 1878	118,775.91
36.	Taxes of 1879	774,006.72
37.	Tax Lien Account	2,929.73
38.	Water Works (Maintenance)	1,250.00
39.	Water Works (Rates, Fines, &c.)	167,375.51
40.	Water Works (Supplies)	2,883.17
	Total	$1,637,613.44

EXPENSES.[1]

The expenditures of the year, as charged to the several city accounts, are shown as follows: —

No.		
1.	Abatements and Discounts	$60,373.44
2.	Bridges	2,639.73
3.	Bridges (West Boston, Craigie, and Prison Point)	6,518.77
4.	Cambridge Public Library	5,993.12
5.	Cemeteries	9,393.18
6.	Engineering	5,868.59
7.	Fire Department	51,664.62
8.	Free Dispensary	1,000.00
9.	Health Department	1,316.08
10.	Incidental Expenses	29,724.37
11.	Interest	202,963.95
12.	Interest on Water Loan	92,282.50
13.	Lighting Streets	18,755.61
14.	Loan, Funded, City	15,000.00
15.	Loan, Temporary	352,000.00
16.	Pauper Department	16,773.57
17.	Pauper Department (Almshouse)	15,885.88
18.	Pauper Department (House Offal)	5,744.28
19.	Police Department	59,848.49
20.	Salaries	20,895.81
21.	School Department (Drawing Schools)	722.17
22.	School Department (Evening Schools)	2,070.91
23.	School Department (Incidental Expenses)	1,383.90
24.	School Department (Salaries)	132,570.49
25.	School Department (Text books and Stationery)	3,272.12
26.	School-houses (Care and Repair)	22,484.32
27.	Sewers (Construction)	4,968.07
28.	Sewers (Maintenance)	2,842.59
	Amount carried forward	$1,144,956.56

[1] See Note, p. 43.

No.		
	Amount brought forward	$1,144,956.56
29.	Shade-trees and Public Grounds	3,599.43
30.	Sinking-Funds	164,865.00
31.	Sinking-Fund of Water Works	45,855.00
32.	State Aid	21,662.37
33.	Stationery and Printing	3,140.47
34.	Street Department (Paving)	5,124.64
35.	Street Department (Repairs)	56,370.52
36.	Street Department (Watering)	15,306.37
37.	Surrendered Estates	13,946.30
38.	Surrendered Estates (Care and Repair)	3,082.56
39.	Tax, National-Bank	6,595.91
40.	Tax, Corporation	51.11
41.	Tax, County	25,116.52
42.	Tax, State	34,770.00
43.	Tax Lien Account	32,404.28
44.	Water Works (Construction)	4,424.56
45.	Water Works (Maintenance)	25,993.08
46.	Water Works (Rates, Fines, &c.)	1,566.96
47.	Water Works (Supplies)	1,534.20
	Total	$1,610,365.84

Mayor's Drafts and Treasurer's Payments compared, November 30, 1879.

No.	Accounts.	Differences. Nov. 30, 1878.	Mayor's Drafts.	Total.	Treasurer's Payments.	Differences. Nov. 30, 1879.
1	Abatements and Discounts		$60,373.44	$60,373.44	$60,373.44	
2	Bridges		2,639.73	2,639.73	2,639.73	
3	Bridges (West Boston, Craigie & Prison Point)	$124.20	6,518.77	6,642.97	6,271.64	$371.33
4	Cambridge Public Library		5,993.12	5,993.12	5,948.57	44.55
5	Cemeteries		9,393.18	9,393.18	9,393.18	
6	Engineering	4.46	5,868.59	5,873.05	5,871.70	1.35
7	Fire Department	122.12	51,664.62	51,786.74	51,657.06	129.68
8	Free Dispensary		1,000.00	1,000.00	1,000.00	
9	Health Department		1,316.08	1,316.08	1,314.28	1.80
10	Incidental Expenses	44.17	29,724.37	29,768.54	29,694.34	74.20
11	Interest		202,963.95	202,963.95	202,963.95	
12	Interest on Water Loan		92,282.50	92,282.50	92,282.50	
13	Lighting Streets	4.95	18,755.61	18,760.56	18,750.86	9.70
14	Loan, Funded (City)		15,000.00	15,000.00	15,000.00	
15	Loan, Temporary		352,000.00	352,000.00	352,000.00	
16	Pauper Department	526.01	16,773.57	17,299.58	17,196.33	103.25
17	Pauper Department (Almshouse)	168.88	15,885.88	16,054.76	15,771.68	283.08
18	Pauper Department (House Offal)		5,744.28	5,744.28	5,729.28	15.00
19	Police Department	60.72	59,848.49	59,909.21	59,784.62	124.59
20	Salaries		20,895.81	20,895.81	20,895.81	
21	School Department (Drawing Schools)		722.17	722.17	722.17	
22	School Department (Evening Schools)		2,070.91	2,070.91	2,070.91	
23	School Department (Incidental Expenses)	20.20	1,383.90	1,404.10	1,181.58	222.52
24	School Department (Salaries)		132,570.49	132,570.49	132,570.49	
25	School Department (Text-Books and Stationery)		3,272.12	3,272.12	3,200.91	71.21
26	School Houses (Care and Repair)	127.71	22,484.32	22,612.03	22,463.00	149.03
27	Sewers (Construction)		4,968.07	4,968.07	4,952.47	15.60

28	Sewers (Maintenance)	14.51	2,842.59	2,857.10	2,857.10	. . .
29	Shade Trees and Public Grounds	39.50	3,599.43	3,638.93	3,341.68	297.25
30	Sinking Funds	. . .	164,865.00	164,865.00	164,865.00	. . .
31	Sinking Fund of Water Works	. . .	45,855.00	45,855.00	45,855.00	. . .
32	State Aid	1,000.00	21,662.37	22,662.37	22,662.37	. . .
33	Stationery and Printing	224.00	3,140.47	3,364.47	3,281.61	82.86
34	Street Department (Construction)	94.75	. . .	94.75	94.75	. . .
35	Street Department (Paving)	9.00	5,124.64	5,133.64	5,079.64	54.00
36	Street Department (Repairs)	226.45	56,370.52	56,596.97	56,435.01	161.96
37	Street Department (Watering)	200.25	15,306.37	15,506.62	15,504.12	2.50
38	Surrendered Estates	. . .	13,946.30	13,946.30	13,946.30	. . .
39	Surrendered Estates (Care and Repair)	11.82	3,082.56	3,094.38	3,069.40	24.98
40	Tax, National Bank	. . .	6,595.91	6,595.91	6,595.91	. . .
41	Tax, Corporation	. . .	51.11	51.11	51.11	. . .
42	Tax, County	. . .	25,116.52	25,116.52	25,116.52	. . .
43	Tax, State	. . .	34,770.00	34,770.00	34,770.00	. . .
44	Tax Lien Account	. . .	32,404.28	32,404.28	6,657.78	25,746.50*
45	Water Works (Construction)	. . .	4,424.56	4,424.56	4,297.10	127.46
46	Water Works (Maintenance)	99.41	25,993.08	26,092.49	26,036.89	55.60
47	Water Works (Rates, Fines, &c.)	112.66	1,566.96	1,679.62	1,679.62	. . .
48	Water Works (Supplies)	. . .	1,534.20	1,534.20	1,534.20	. . .
	Totals	$3,235.77	$1,610,365.84	$1,613,601.61	$1,585,431.61	$28,170.00

* See Note, page 43.

Recapitulation of Appropriations, Receipts, and Expenditures, for Year ending Nov. 30, 1879.

CITY ACCOUNTS.	Appropriations.	Actual Revenue.	Total.	Amount Transferred to.	Amount Transferred from.	State of Appropriation, Nov. 30, 1879.	Expended.	Balances Unexpended.
Abatement and Discounts	$52,000.00	. . . .	$52,000.00	$9,000.00	. . . .	$61,000.00	$60,373.44	$626.56
Bridges	2,000.00	. . . .	2,000.00	1,000.00	. . . .	3,000.00	2,639.73	360.27
Bridges (West Boston, Craigie, and Prison Point)	7,000.00	$5.50	7,005.50	. . . .	. . . .	7,005.50	6,518.77	486.73
Cambridge Public Library	3,000.00	2,486.19	5,486.19	510.00	. . . .	5,996.19	5,993.12	3.07
Cemeteries	500.00	8,897.27	9,397.27	. . . .	. . . .	9,397.27	9,393.18	4.09
Engineering	6,500.00	. . . .	6,500.00	. . . .	. . . .	6,500.00	5,868.59	631.41
Fire Department	50,100.00	220.37	50,320.37	1,600.00	. . . .	51,920.37	51,664.62	255.75
Free Dispensary	1,000.00	. . . .	1,000.00	. . . .	. . . .	1,000.00	1,000.00	. . . .
Health Department	2,000.00	. . . .	2,000.00	. . . .	. . . .	2,000.00	1,316.08	683.92
Incidental Expenses	25,000.00	23,014.10	48,014.10	. . . .	. . . .	48,014.10	29,724.37	18,289.73
Interest	199,000.00	6,275.79	205,275.79	. . . .	$697.50	204,578.29	202,963.95	1,614.34
Interest on Water Loan	. . . .	. . . .	. . . .	92,282.50	. . . .	92,282.50	92,282.50	. . . .
Lighting Streets	19,500.00	30.61	19,530.61	. . . .	. . . .	19,530.61	18,755.61	775.00
Pauper Department	19,000.00	5,225.94	24,225.94	. . . .	. . . .	24,225.94	16,773.57	7,452.37
Pauper Department (Almshouse)	14,700.00	2,266.82	16,966.82	. . . .	. . . .	16,966.82	15,885.88	1,080.94
Pauper Department (House Offal)	2,300.00	4,411.20	6,711.20	. . . .	. . . .	6,711.20	5,744.28	966.92
Police Department	57,500.00	3,334.11	60,834.11	. . . .	. . . .	60,834.11	59,848.49	985.62
Salaries	20,900.00	. . . .	20,900.00	. . . .	. . . .	20,900.00	20,895.81	4.19
School Department (Drawing Schools)	725.00	. . . .	725.00	. . . .	. . . .	725.00	722.17	2.83
School Department (Evening Schools)	2,500.00	. . . .	2,500.00	. . . .	400.00	2,100.00	2,070.91	29.09
School Department (Incidental Expenses)	1,775.00	. . . .	1,775.00	. . . .	. . . .	1,775.00	1,383.90	391.10
School Department (Salaries)	134,400.00	1,421.33	135,821.33	. . . .	2,500.00	133,321.33	132,570.49	750.84
School Department (Text-Books and Stationery)	3,000.00	. . . .	3,000.00	300.00	. . . .	3,300.00	3,272.12	27.88
School Houses (Care and Repair)	20,500.00	. . . .	20,500.00	2,600.00	. . . .	23,100.00	22,484.32	615.68
Sewers (Construction)	4,000.00	8,049.73	12,049.73	. . . .	. . . .	12,049.73	4,968.07	7,081.66
Sewers (Maintenance)	6,000.00	. . . .	6,000.00	. . . .	. . . .	6,000.00	2,842.59	3,157.41
Shade Trees and Public Grounds	4,200.00	82.40	4,282.40	. . . .	. . . .	4,282.40	3,599.43	682.97
Sinking Funds	164,865.00	. . . .	164,865.00	. . . .	. . . .	164,865.00	164,865.00	. . . .
Sinking Fund of Water Works	. . . .	. . . .	. . . .	45,855.00	. . . .	45,855.00	45,855.00	. . . .
State Aid	. . . .	27,598.97	27,598.97	. . . .	. . . .	27,598.97	21,662.37	5,936.60
Stationery and Printing	3,000.00	. . . .	3,000.00	150.00	. . . .	3,150.00	3,140.47	9.53
Street Department (Construction)	. . . .	852.50	852.50	. . . .	. . . .	. . . .	. . . .	. . . .
Street Department (Paving)	7,000.00	83.52	7,083.52	. . . .	. . . .	7,083.52	5,124.64	1,958.88
Street Department (Repairs)	57,000.00	265 13	57,265.13	150.00	1,000.00	56,415.13	56,370.52	44.61
Street Department (Watering)	7,500.00	8,594.04	16,094.04	500.00	. . . .	16,594.04	15,306.37	1,287.67
Surrendered Estates	18,800.00	13,141.37	31,941.37	. . . .	12,060.00	19,881.37	13,946.30	5,935.07
Surrendered Estates (Care and Repair)	. . . .	3,375.34	3,375.34	150.00	. . . .	3,525.34	3,082.56	442.78
Water Works (Construction)	8,000.00	. . . .	8,000.00	. . . .	. . . .	8,000.00	4,424.56	3,575.44
Water Works (Maintenance)	2,440.00	1,250.00	3,690.00	23,560.00	. . . .	27,250.00	25,993.08	1,256.92
Water Works (Rates, Fines, &c.)	. . . .	167,375.51	167,375.51	. . . .	160,000.00	7,375.51	1,566.96	5,808.55
Water Works (Supplies)	. . . .	2.883.17	2,883.17	. . . .	1,000.00	1,883.17	1,534.20	348.97
Totals	$927,705.00	$291,140.91	$1,218,845.91	$177,657.50	$177,657.50	$1,217,993.41	$1,144,428.02	$73,565.39

DETAILED STATEMENT

SHOWING RECEIPTS AND EXPENDITURES AND AMOUNTS APPROPRIATED, UNDER EACH CITY ACCOUNT, FOR THE FINANCIAL YEAR ENDING NOV. 30, 1879.

Abatements and Discounts.

Amount appropriated		$52,000.00
Add amount transferred		9,000.00
		$61,000.00
EXPENDED.		
For Abatement of taxes	$31,083.64	
Discount on taxes	29,289.80	
Total, as per item No. 1 of expenses		60,373.44
Balance unexpended		$626.56

Assessment Account.

RECEIVED.

For amount of sales of real estate to city for non-payment of assessments, as per item No. 1 of receipts	$15,503.34

Bridges.

Amount appropriated		$2,000.00
Add amount transferred		1,000.00
		$3,000.00
EXPENDED.		
For Caulking bridge	$100.00	
Hardware and tools	22.46	
Hoisting draw	588.75	
Iron work	53.66	
Labor as per pay-roll	1,486.47	
Lumber	388.39	
Total, as per item No. 2 of expenses		2,639.73
Balance unexpended		$360.27

Bridges (West Boston, Craigie's, and Prison Point).

Amount appropriated		$7,000.00
RECEIVED.		
For wharfage, as per item No. 2 of receipts		5.50
		$7,005.50
EXPENDED.		
For Advertising	$2.88	
Castings	25.41	
Commissioner, E. Parmenter, salary	500.00	
Draw, repairs	27.02	
Fuel	175.01	
Gas	898.23	
Hardware and tools	19.42	
House, draw-tender's	512.15	
Iron work	188.18	
Labor, as per pay-roll	2,079.88	
Lumber	248.62	
Oil	21.97	
Painting bridge, labor and material	631.27	
Paving	45.26	
Piling	10.00	
Repairs, general	442.70	
Sweeping and cleaning bridge	107.27	
Water-rates	8.50	
Watering road-way	575.00	
Total, as per item No. 3 of expenses		6,518.77
Balance unexpended		$486.73

Cambridge Public Library.

Amount appropriated		$3,000.00
Add amount transferred		510.00
		$3,510.00
RECEIVED.		
For catalogues and fines	$157.71	
Dog licenses from county	2,328.48	
Total, as per item No. 3 of receipts		2,486.19
Amount carried forward		$5,996.19

Amount brought forward		$5,996.19
EXPENDED.		
For Advertising	$45.25	
Assistants, services of	1,644.74	
Binding books, &c.	326.36	
Books	1,049.19	
Bookcases	70.00	
Directories	5.00	
Expressage	5.70	
Furniture and fixtures	99.99	
Gas	337.27	
Ice	13.00	
Librarian, services of	600.00	
Magazines and papers	168.32	
Printing	318.40	
Repairs, general	185.76	
Rent of rooms	1,000.00	
Stationery	113.14	
Water rates	9.00	
Watering street	2.00	
Total, as per item No. 4 of expenses		5,993.12
Balance unexpended		$3.07

Cemeteries.

Amount appropriated		$500.00
RECEIVED.		
For sale and care of lots	$7,291.27	
Burial fees	1.606.00	
Total, as per item No. 4 of receipts		8,897.27
		$9,397.27
EXPENDED.		
For Bricks	$20.00	
Car tickets	18.00	
Cement	19.85	
Directory	2.50	
Amounts carried forward	$60.35	$9,397.27

Amounts brought forward	$60.35	$9,397.27
For Expressage	.40	
Fuel	79.36	
Grave covers	37.48	
Hardware and tools	104.94	
Hose	50.00	
Labor, as per pay-roll	5,736.32	
Loam and gravel	254.50	
Lumber	117.57	
Paint	9.16	
Plants and seeds	244.48	
Posts, granite	66.85	
Printing	23.50	
Repairs, general	101.74	
Sodding and manure	615.44	
Stationery	27.64	
Stone	32.25	
Stones, number	14.59	
Superintendent J. K. Farwell, salary	1,338.60	
Tablets	124.25	
Water and meter rates	353.76	
Total, as per item No. 5 of expenses		9,393.18
Balance unexpended		$4.09

Cemetery Fund.

Amount of fund, Nov. 30, 1878	$1,650.00

RECEIVED.

For perpetual care of lots in Cambridge Cemetery, as per item No. 5 of receipts	300.00
Amount of fund Nov. 30, 1879	$1,950.00

Engineering.

Amount appropriated		$6,500.00

EXPENDED.

For Assistants, services of	$3,015.07	
Binding plans	2.50	
Amounts carried forward	$3,017.57	$6,500.00

Amounts brought forward	$3,017.57	$6,500.00
For Bounds, stone	3.25	
Car tickets	77.92	
Chemicals	2.70	
Directories	7.50	
Expressage	.70	
Hardware and tools	16.57	
Horse-hire	63.00	
Instruments, repairs	61.27	
Map, mounting	25.00	
Printing	10.31	
Salary, W. S. Barbour, engineer	2,541.67	
Table, drafting	41.13	
Total, as per item No. 6 of expenses		5,868.59
Balance unexpended		$631.41

Fire Department.

Amount appropriated		$50,100.00
Add amount transferred		1,600.00
		$51,700.00

RECEIVED.

For Materials, old	$18.80	
Rent of tenements	177.07	
Tapper money refunded	24.50	
Total, as per item No. 6 of receipts		220.37
		$51,920.37

EXPENDED.

For Advertising	$13.75	
Alarms for fires	51.00	
Apparatus, repairs	2,289.30	
Assistant engineer, T. J. Casey, salary (balance)	140.28	
Assistant engineer, R. F. Tobin, salary	275.00	
Assistant engineer, N. W. Bunker, salary	275.00	
Assistant engineer, C. W. Brackett, salary	275.00	
Amounts carried forward	$3,319.33	$51,920.37

Amounts brought forward	$3,319.33	$51,920 37
For Badges and hats	17.80	
Brooms and brushes	5.00	
Chief engineer, P. H. Raymond, salary (balance)	494.44	
Chief engineer, T. J. Casey, salary	538.89	
Clerk of board, N. W. Bunker (balance)	8.34	
Damages	23.50	
Fines of members (balance)	57.00	
Fuel	844.22	
Furniture and bedding	47.64	
Gas	1,599.95	
Gas-regulator	20.00	
Hardware and tools	117.45	
Harnesses and repairs	290.58	
Hay, grain, and straw	2,041.52	
Horses	670.00	
Horse medicines	9.00	
Horse-hire	1,200.35	
Horse-shoeing	399.71	
Hose and repairs	296.23	
Houses, repairs of	571.53	
Hydrants, labor on	250.00	
Ice	122.00	
Oil, matches, &c.	103.54	
Paving	50.00	
Printing	30.15	
Rent	90.00	
Reservoirs	154.00	
Services of engine-men	30,059.27	
Soap	55.25	
Teaming and expressage	28.95	
Telegraph supplies and repairs	1,143.20	
Veterinary services	140.00	
Washing and cleaning	397.78	
Water rates	165.00	
Water for hydrants	6,303.00	
Total, as per item No. 7 of expenses		51,664.62
Balance unexpended		$255.75

Free Dispensary.

Amount appropriated	$1,000.00

EXPENDED.

For Dispensary purposes, as per item No. 8 of expenses	1,000.00

Health Department.

Amount appropriated	$2,000.00

EXPENDED.

For Advertising	$30.75	
Analyses of water	30.00	
Car tickets	45.00	
Directory	2.50	
Expressage	2.50	
Labor	5.40	
Postage	10.00	
Printing	39.65	
Salary, E. R. Cogswell, health-officer	999.99	
Salary, John McDuffie, clerk of board	137.49	
Stationery	12.80	
Total, as per item No. 9 of expenses		1,316.08
Balance unexpended		$683.92

Incidental Expenses.

Amount appropriated	$25,000.00

RECEIVED.

For Armory rent from State	$800.00	
Assessments, nuisance	20.00	
Collector's costs	2,783.01	
Costs of law suits	45.64	
Fees and licenses, city clerk	1,293.30	
Fees, city solicitor	68.37	
Fees, weighers	47.65	
Fees, sealers	437.15	
Amounts carried forward	$5,495.12	$25,000.00

Amounts brought forward	$5,495.12	$25,000.00
For Fees, field-drivers	2.25	
Licenses, grease	94.00	
Licenses, liquor	15,506.00	
Material, old	10.50	
Release of tax titles	706.23	
Rent of public buildings	1,200.00	
Total, as per item No. 7 of receipts		23,014.10
		$48,014.10

EXPENDED.

For Advertising	$665.26	
Assessors, clerical assistance to	191.40	
Assessors, assistant, services of	729.75	
Auditor, clerical assistance to	60.00	
Bathing-yard	36.11	
Bells, ringing	170.75	
Births, returns of	50.00	
Burglar alarm, treasurer's office	40.00	
Car tickets	450.20	
Carriage hire	79.50	
Census, taking	135.00	
City Clerk, clerical assistance to	120.00	
Clocks, church, care of	196.78	
Coin scale	2.50	
Costs of suit, Walter K. Foster	129.64	
Damages awarded Mary A. Laha	125.00	
Damages awarded William Norton	2,554.63	
Damages awarded Mary O'Conner	25.00	
Damages awarded Alex. McKenney	60.00	
Damages awarded Jerome S. Daniels	18.00	
Damages awarded Patrick O'Neil	75.00	
Damages awarded Thomas Southward	50.00	
Damages awarded J. A. L. Smith	75.00	
Damages awarded Margaret Branigan	500.00	
Deaths, reporting	185.70	
Deeds, recording	76.05	
Deeds, abstracts of, for assessors	470.84	
Amounts carried forward	$7,272.11	$48,014.10

Amounts brought forward	$7,272.11	$48,014.10
For Directories	36.50	
Expressage	24.65	
Flowers, for inauguration	10.00	
Gas	128.60	
Ice	58.95	
Legal expenses	328.90	
Liquor-licenses, one fourth to State	5,516.25	
Memorial Day, observance of	500.00	
Music, high-school graduation	32.00	
Newspapers, subscription for	62.00	
Page to Common Council, services	50.00	
Post-office boxes, rent of	8.00	
Refund for defective tax titles	3,455.78	
Sealer's expenses	296.75	
Taxes, back, collecting	442.71	
Tax, town of Belmont	42.75	
Tax, city of Somerville	756.00	
Treasurer, clerical assistance to	1,660.98	
Treasurer, making and distributing notices	453.88	
Ward-officers, services of	275.00	
Ward-rooms, rent and care of	234.50	
Witnesses, expert, services of	237.22	
City Hall:—		
Assistant messenger, services of	1,026.64	
Carpenter work	167.38	
Fuel	244.70	
Furniture and repairs	210.78	
Gas	447.98	
Gas-fixtures, repairs	45.76	
Hand-stamps, repairs	15.20	
Hardware and tools	130.23	
Heating apparatus, repairs	58.35	
Ice	80.84	
Masons' work	71.73	
Mats and brushes	34.51	
Painting and glazing	110.42	
Plumbing	95.49	
Reflector, light	26.25	
Amounts carried forward	$24,649.79	$48,014.10

Amounts brought forward	$24,649.79	$48,014.10
For Roof, repairs	31.55	
Washing and cleaning	646.36	
Ward One Building:—		
Brushes	3.25	
Fuel	680.45	
Gas	518.66	
Gas regulator	32.00	
Hardware and tools	14.84	
Heating apparatus, repairs	13.71	
Janitor, services of	1,176.66	
Repairs, general	166.48	
Water rates	126.45	
Central Square Building:—		
Brushes and mats	2.25	
Carpets, cleaning	10.10	
Fuel	137.55	
Gas	191.77	
Hardware and tools	55.60	
Janitor, services of	1,176.68	
Repairs, general	29.49	
Water rates	60.73	
Total, as per item No. 10 of expenses		29,724.37
Balance unexpended		$18,289.73

Interest.

Amount appropriated	$199,000.00
Deduct amount transferred	697.50
	$198,302.50

RECEIVED.

On taxes and assessments, as per item No. 8 of receipts	6,275.79
	$204,578.29

EXPENDED.

On Cemetery Fund	$99.00	
Dowse Institute Fund	900.00	
Amounts carried forward	$999.00	$204,578.29

Amounts brought forward	$999.00	$204,578.29
For Daniel White Fund	300.00	
Funded loan	192,957.18	
Over-drafts	359.02	
Sanders Temperance Fund	600.00	
Sinking-fund of Water Works	458.55	
Temporary loan	7,230.20	
Trustees Cambridge Public Library	60.00	
Total, as per item No. 11 of expenses		202,963.95
Balance unexpended		$1,614.34

Interest on Water Loan.

Amount transferred	$92,282.50

EXPENDED.

On Water loan, as per item No. 12 of expenses	92,282.50

Lighting Streets.

Amount appropriated	$19,500.00

RECEIVED.

For damage to lanterns, as per item No. 9 of receipts	30.61
	$19,530.61

EXPENDED.

For Alcohol	$108.00	
Car tickets	5.00	
Directory	2.50	
Expressage	1.30	
Gas	12,020.09	
Hardware and tools	4.05	
Ladder, repairs	.75	
Lamps, lighting and care of	5,163.70	
Lanterns and repairs	254.68	
Oil and matches	232.40	
Pipes and fittings	90.66	
Amounts carried forward	$17,883.13	$19,530.61

Amount brought forward	$17,883.13	$19,530.61
For Posts and repairs	328.23	
Printing	10.92	
Reflectors, lamp	175.00	
Supt. of lamps, B. F. Nourse, salary	358.33	
Total, as per item No. 13 of expenses		18,755.61
Balance unexpended		$775.00

Loan Funded (City).

Amount of loan Nov. 30, 1878	$3,269,000.00

EXPENDED.

For City bonds payable in 1879, as per item No. 14 of expenses	15,000.00
Amount of loan Nov. 30, 1879	$3,254,000.00

Loan (Temporary).

RECEIVED.

For City notes issued during the year, as per item No. 10 of receipts	$352,000.00

EXPENDED.

For City notes due and paid Oct. 10, 1879, as per item No. 15 of expenses	352,000.00

Pauper Department.

Amount appropriated	$19,000.00

RECEIVED.

For Aid to paupers, other cities and towns	$1,626.07	
Aid to pauper soldiers	222.59	
Aid to paupers, Commonwealth	16.94	
Aid to paupers	2,948.65	
Board of persons at institutions	411.69	
Total, as per item No. 11 of receipts		5,225.94
Amount carried forward		$24,225.94

Amount brought forward		$24,225.94
EXPENDED.		
For Boots and shoes	$320.00	
Car tickets and fares	230.70	
Clerical assistance in office	479.65	
Copying outfit	14.20	
Directory	5.00	
Dry goods	5.00	
Fuel	933.20	
Groceries	1,504.05	
Ice	6.00	
Medical attendance	187.05	
Medicines	11.20	
Paupers, aid to	149.72	
Paupers, aid to, other cities and towns .	1,209.79	
Paupers, aid to, Commonwealth . . .	796.90	
Paupers, burial of	254.00	
Paupers, care of at institutions . . .	7,080.46	
Paupers, transportation of	10.11	
Postage stamps	25.53	
Printing	180.57	
Provisions	440.98	
Secretary of Board, salary	1,200.00	
Sign	3.00	
Stationery and blank books	116.62	
Tenements for paupers, rent of . . .	304.00	
Visiting agent, services of	1,175.00	
Watchman and driver of wagon . . .	130.84	
Total, as per item No. 16 of expenses		16,773.57
Balance unexpended		$7,452.37

Pauper Department (Almshouse).

Amount appropriated		$14,700.00
RECEIVED.		
For Aid to paupers, other cities and towns	$75.57	
Aid to paupers	395.58	
Amounts carried forward	$471.15	$14,700.00

	Amounts brought forward	$471.15	$14,700.00
For	Duplicate bills, amount refunded . .	41.07	
	Stone, gravel, and farm products . .	1,754.60	
Total, as per item No. 12 of receipts			2,266.82
			$16,966.82

EXPENDED.

For	Baker, labor of	$199.00	
	Boots and shoes	369.30	
	Candy and nuts	22.25	
	Car tickets and fares	30.50	
	Carpeting	32.03	
	Chaplain, services of	100.00	
	Clothing	295.88	
	Cows	159.60	
	Crockery and tin ware	49.14	
	Dry goods	645.42	
	Expressage	4.15	
	Fish	262.73	
	Fuel	1,664.73	
	Garden seeds	32.99	
	Gas	362.77	
	Groceries	1,659.39	
	Hardware and tools	173.71	
	Heating apparatus, repairs	119.47	
	Horses, clipping	5.00	
	Horse-shoeing	54.15	
	Hospital supplies	147.91	
	Ice	85.40	
	Labor, as per pay-roll	1,508.00	
	Labor on farm and ledge	1,145.28	
	Lumber	236.04	
	Manure	99.00	
	Masons' work	30.00	
	Newspapers	18.25	
	Oil, &c.	9.75	
	Organist, services of	19.00	
	Physician, services of	200.00	
	Amounts carried forward	$9,740.84	$16,966.82

Amounts brought forward	$9,740.84	$16,966.82
For Pigs	18.20	
Plumbing	150.35	
Powder and fuse	59.95	
Presents for children	19.50	
Provisions	3,887.68	
Repairs, carpenter work	364.50	
Soap	102.40	
Song-books	10.26	
Stationery and stamps	22.40	
Tobacco and snuff	113.40	
Veterinary services	26.00	
Violin	8.00	
Wagons, repairs of	110.33	
Warden, services of	800.00	
Washing	34.00	
Water rates	377.19	
Wooden ware	40.88	
Total, as per item No. 17 of expenses		15,885.88
Balance unexpended		$1,080.94

Pauper Department (House Offal).

Amount appropriated	$2,300.00

RECEIVED.

For Offal, as per item No. 13 of receipts	4,411.20
	$6,711.20

EXPENDED.

For Buckets	$15.00	
Hardware and tools	40.55	
Harnesses and repairs	108.58	
Hay, grain, and straw	757.56	
Horse	275.00	
Horse-shoeing	135.36	
Labor, as per pay-roll	4,266.00	
Veterinary services	4.00	
Amounts carried forward	$5,602.05	$6,711.20

Amounts brought forward	$5,602.05	$6,711.20
For Wagons, repairs	33.75	
Water rates	108.48	
Total, as per item No. 18 of expenses		5,744.28
Balance unexpended		$966.92

Pike, James.

For balance due on account of his note	$3,081.00

RECEIVED.

For amount paid on account, as per item No. 14 of receipts	1,000.00
Balance due Nov. 30, 1879	$2,081.00

Police Department.

Amount appropriated		$57,500.00

RECEIVED.

For Court fees, from officers	$68.80	
Court penalties	5.00	
Court fines, county of Middlesex . .	50.00	
Extra services of officers	46.00	
Police-court fees	3,157.16	
Prisoner, conveying	3.15	
Stakes and ropes, use of	4.00	
Total, as per item No. 15 of receipts		3,334.11
		$60,834.11

EXPENDED.

For Bill-posting	$10.00	
Billies	11.90	
Boat, police, care of	8.00	
Buttons and straps	61.50	
Car fares and telegrams	7.49	
Chief of Police, F. W. Hagar, salary .	1,633.33	
Court expenses of chief	7.00	
Amounts carried forward	$1,739.22	$60,834.11

	Amounts brought forward	$1,739.22	$60,834.11
For	Damage by police telegraph . . .	10.00	
	Directories	12.50	
	Expenses, travelling	91.82	
	Food for prisoners at stations . . .	88.64	
	Fuel	589.16	
	Furniture and repairs	123.31	
	Gas	813.92	
	Gas regulator	64.00	
	Harnesses and repairs	22.10	
	Horse equipments	17.00	
	Horse-shoeing	29.34	
	Hay, grain, and straw	206.82	
	Ice	43.50	
	Law book	5.50	
	Medical attendance	12.00	
	Newspapers	20.00	
	Oil and matches	17.10	
	Policemen, services of	55,173.28	
	Printing	20.00	
	Station houses, repairs	196.84	
	Telegraph, repairs	44.74	
	Wagon	280.00	
	Wagon, repairs	72.05	
	Washing and cleaning	108.85	
	Water rates	46.80	
Total, as per item No. 19 of expenses			59,848.49
Balance unexpended			$985.62

Salaries.

Amount appropriated		$20,900.00
EXPENDED.		
Paid Samuel L. Montague, mayor . . .	$1,875.00	
Justin A. Jacobs, city clerk . . .	3,000.00	
Walter W. Pike, assistant city clerk	1,000.00	
Amounts carried forward	$5,875.00	$20,900.00

Amounts brought forward	$5,875.00	$20,900.00
Paid William W. Dallinger, treasurer and collector	3,083.34	
William W. Dallinger, treasurer sinking-funds	216.66	
Samuel E. Chandler, auditor . . .	1,500.00	
John McDuffie, clerk of committees	1,750.00	
J. Warren Cotton, clerk of common council	216.66	
Francis L. Pratt, city messenger . .	1,416.66	
John W. Hammond, city solicitor .	2,000.00	
Levi L. Cushing, assessor (balance) .	250.00	
Artemas Z. Brown, assessor . . .	1,333.33	
Andrew J. Green, assessor	1,333.33	
Edmund B. Whitman, assessor . .	1,083.33	
H. P. Walcott, city physician . . .	300.00	
Stephen P. Sharples, inspector of milk	33.34	
Stephen P. Sharples, sealer of weights, &c. (balance)	212.50	
Benjamin F. Nourse, sealer of weights, &c.	291.66	
Total, as per item, No. 20 of expenses		20,895.81
Balance unexpended		$4.19

School Department (Drawing Schools).

Amount appropriated		$725.00
EXPENDED.		
For Advertising	$7.00	
Cleaning model	2.37	
Exhibition expenses	4.60	
Printing	8.20	
Teachers, services of	700.00	
Total, as per item No. 21 of expenses		722.17
Balance unexpended		$2.83

School Department (Evening Schools).

Amount appropriated	$2,500.00
Deduct amount transferred	400.00
	$2,100.00

EXPENDED.

For Advertising	$26.50	
Books	10.00	
Janitors, services of	263.75	
Stationery	3.66	
Teachers, services of	1,767.00	
Total, as per item No. 22 of expenses		2,070.91
Balance unexpended		$29.09

School Department (Incidental Expenses).

Amount appropriated		$1,775.00

EXPENDED.

For Advertising	$36.25	
Binding books	22.12	
Blocks	3.00	
Census, taking	6.00	
Chemicals and apparatus	59.68	
Diplomas for graduates	116.75	
Erasers, blackboard	22.65	
Expressage	2.60	
Globe	12.27	
High School, records, keeping	140.00	
Lithogram	7.00	
Maps, repairs	8.80	
Materials, sewing	1.16	
Page to committee, services	25.00	
Pianos, tuning	12.00	
Printing	556.09	
Ribbon	11.35	
Amounts carried forward	$1,042.72	$1,775.00

Amounts brought forward	$1,042.72	$1,775.00
For Secretary of Committee, salary . .	300.00	
Superintendent, incidental expenses .	41.18	
Total, as per item No. 23 of expenses		1,383.90
Balance unexpended		$391.10

School Department (Salaries).

Amount appropriated		$134,400.00
Deduct amount transferred		2,500.00
		$131,900.00
RECEIVED.		
For Hopkins Fund, income of	$783.00	
Tuition of non-resident pupils . . .	638.33	
Total, as per item No. 16 of receipts		1,421.33
		$133,321.33
EXPENDED.		
For Superintendent of schools, salary . .	$2,700.00	
Teachers, salaries of	127,145.50	
Truant officers, services of	2,724.99	
Total, as per item No. 24 of expenses		132,570.49
Balance unexpended		$750.84

School Department (Text-Books and Stationery).

Amount appropriated		$3,000.00
Add amount transferred		300.00
		$3,300.00
EXPENDED.		
For Charts	$7.50	
Book, record	7.00	
Stationery	853.66	
Text-books	2,403.96	
Total, as per item No. 25 of expenses		3,272.12
Balance unexpended		$27.88

School Houses (Care and Repair).

Amount appropriated	$20,500.00
Add amount transferred	2,600.00
	$23,100.00

EXPENDED.

For	Blackboards	$203.11
	Brooms and brushes	241.50
	Cleaning	15.00
	Clocks and bells, repairs	54.15
	Coal, weighing	42.84
	Desks and furniture	99.74
	Disinfectant	32.72
	Drainage	46.32
	Expressage and teaming	17.15
	Fuel	5,972.91
	Gas	198.82
	Hardware and tools	123.61
	Heating apparatus, repairs	2,205.87
	Hose	14.00
	Ink fountains and wells	100.33
	Janitors, services of	8,043.35
	Labor, miscellaneous	22.75
	Lightning rods	81.50
	Lumber	72.36
	Mats and shades	156.10
	Repairs, carpenter work	2,560.56
	Repairs, mason work	141.67
	Repairs, painting and glazing	999.24
	Repairs, plumbing	172.13
	Repairs to roofs	503.34
	Repairs, whitening	313.25
	Ventilators	50.00
Total, as per item No. 26 of expenses		22,484.32
Balance unexpended		$615.68

Sewers (Construction).

Amount appropriated		$4,000.00
RECEIVED.		
For Assessments, as per item No. 17 of receipts		8,049.73
		$12,049.73
EXPENDED.		
For Advertising	$14.64	
Assessments refunded	35.05	
Brick	235.17	
Catch-basins, constructing	892.46	
Cement	80.00	
Drain-pipe	241.23	
Fuel	30.91	
Hardware and tools	57.68	
Lumber	768.23	
Manholes, constructing	35.00	
Pump, use of	253.60	
Sewers, constructing	2,157.56	
Sewers, inspecting work on	133.82	
Sewer rings	17.80	
Teaming	9.24	
Water	5.68	
Total, as per item No. 27 of expenses		4,968.07
Balance unexpended		$7,081.66

Sewers (Maintenance).

Amount appropriated		$6,000.00
EXPENDED.		
For Advertising	$1.62	
Bulkheads	102.76	
Catch-basins, cleaning	1,065.25	
Catch-basins, covers	115.75	
Drain-pipe	33.35	
Amounts carried forward	$1,318.73	$6,000.00

	Amounts brought forward	$1,318.73	$6,000.00
For	Expressage	.90	
	Fence, whitewashing	10.50	
	Hardware and tools	78.65	
	Lumber	110.79	
	Manholes, repairing	48.18	
	Report, printing	78.00	
	Sewers, cleaning	99.75	
	Sewers, repairing	1,071.26	
	Tide-gates, cleaning	25.83	
Total, as per item No. 28 of expenses			2,842.59
Balance unexpended			$3,157.41

Shade-Trees and Public Grounds.

Amount appropriated			$4,200.00
	RECEIVED.		
For	Hay, trees, &c.	$32.00	
	Refund, amount of duplicate bill	16.40	
	Setting out trees	34.00	
Total, as per item No. 18 of receipts			82.40
			$4,282.40
	EXPENDED.		
For	Brooms	$2.25	
	Castings, iron	29.60	
	Common, Ward 1, repairs	93.00	
	Fences, repairs	118.60	
	Flags and repairs	66.00	
	Flag-staff	301.25	
	Grading	50.00	
	Halyards	5.64	
	Hardware and tools	68.04	
	Hay, grain, and straw	52.38	
	Horse	40.00	
	Horse-hire	26.25	
	Amounts carried forward	$853.01	$4,282.40

Amounts brought forward	$853.01	$4,282.40
For Hose	14.05	
Labor	2,176.25	
Loam	19.68	
Rent of land	20.00	
Teaming and expressage	81.63	
Trees and plants	182.18	
Wagon, repairs	143.75	
Walk, building	108.88	
Total, as per item No. 29 of expenses		3,599.43
Balance unexpended		$682.97

Sinking-Funds, Commissioners of.

Amount of fund Nov. 30, 1878		$828,699.05
RECEIVED.		
From City Treasurer, amount appropriated by the City Council	$164,865.00	
Amount of interest earned to Nov. 30, 1879	46,944.56	
		211,809.56
		$1,040,508.61
EXPENDED.		
For amount paid City Treasurer for the redemption of bonds due		$15,000.00
Amount of fund Nov. 30, 1879		$1,025,508.61

Sinking-Fund of Water Works, Trustees of.

Amount of fund Nov. 30, 1878		$291,955.46
RECEIVED.		
For amount of revenue transferred from Water Works (Rates, fines, &c.) . . .	$45,855.00	
Amount of interest earned to Nov. 30, 1879	15,657.56	
		61,512.56
Amount of fund Nov. 30, 1879		$353,468.02

State Aid.

For Allotment from Commonwealth	$27,563.47	
Amount reimbursed from other towns	35.50	
Total, as per item No. 20 of receipts		$27,598.97

EXPENDED.

For Clerical assistance to committee	$556.00	
Aid to indigent soldiers	1,058.50	
Aid to soldiers and their families	20,047.87	
Total, as per item No. 32 of expenses		21,662.37
Balance unexpended		$5,936.60

Stationery and Printing.

Amount appropriated	$3,000.00
Add amount transferred	150.00
	$3,150.00

EXPENDED.

For Blank books	$22.50	
Printing, documents	863.77	
Printing, voting lists	131.50	
Printing, miscellaneous	1,224.70	
Stationery	898.00	
Total, as per item No. 33 of expenses		3,140.47
Balance unexpended		$9.53

Street Department (Construction).

RECEIVED.

For Betterment assessments	$797.50
Sidewalks	55.00
Total, as per item No. 21 of receipts	$852.50

Street Department (Paving).

Amount appropriated		$7,000.00
RECEIVED.		
For Sidewalk assessments, as per item No. 22 of receipts		83.52
		$7,083.52
EXPENDED.		
For Advertising	$1.80	
Brick	444.00	
Flagging	65.50	
Labor, as per pay-roll	708.75	
Paving	3,127.07	
Sand	167.13	
Stone	610.39	
Total, as per item No. 34 of expenses		5,124.64
Balance unexpended		$1,958.88

Street Department (Repairs).

Amount appropriated		$57,000.00
Add amount transferred		150.00
		$57,150.00
Deduct amount transferred		1,000.00
		$56,150.00
RECEIVED.		
For Ashes and street scrapings	$159.50	
Horse	40.00	
Rail, repairing	2.13	
Stone, gravel, &c.	58.50	
Team, use of	5.00	
Total, as per item No. 23 of receipts		265.13
Amount carried forward		$56,415.13

Amount brought forward		$56,415.13
EXPENDED.		
For Advertising	$1.40	
Brick	27.50	
Broom stock and brushes	40.10	
Carts, repairs	545.94	
Car tickets and fares	9.50	
Damages awarded E. W. Cutler . .	500.00	
Damages awarded Elizabeth D. Mallon	11.00	
Expressage and freight	7.52	
Fuel	98.75	
Gas	79.69	
Gravel	6,878.91	
Hardware and tools	238.95	
Harnesses, repairs	250.47	
Hay, grain, and straw	3,088.16	
Horses	112.00	
Horse-shoeing	569.42	
Iron work	80.65	
Labor, as per pay-roll	26,422.53	
Lumber	251.07	
Medicines, horse	16.25	
Oil and grease	57.85	
Repairs by contract	1,250.00	
Sea wall, repairs	848.00	
Signs, street	40.00	
Stable, repairs	58.74	
Stone	11,704.30	
Stone-crusher, repairs	184.50	
Stone work	15.00	
Stove, repairs	18.33	
Superintendent, B. W. Woodard, salary	850.00	
Superintendent, S. P. Shepherd, salary (balance)	866.66	
Teaming	594.38	
Tide-water, displaced	53.40	
Tools, repairs	399.13	
Amounts carried forward	$56,170.10	$56,415.13

Amounts brought forward	$56,170.10	$56,415.13
For Veterinary services	78.33	
Water rates	122.09	
Total, as per item No. 35 of expenses		56,370.52
Balance unexpended		$44.61

Street Department (Watering).

Amount appropriated		$7,500.00
Add amount transferred		500.00
		$8,000.00

RECEIVED.

For watering streets from sundry persons, as per item No. 24 of receipts		8,594.04
		$16,594.04

EXPENDED.

For Advertising	$1.83	
Carts, repairs	282.16	
Hose	165.14	
Superintendent, salary (balance) . .	25.00	
Water for streets	5,561.47	
Watering streets	9,270.77	
Total, as per item No. 36 of expenses		15,306.37
Balance unexpended		$1,287.67

Surrendered Estates.

Amount appropriated		$18,800.00
Deduct amount transferred		12,060.00
		$6,740.00

RECEIVED.

For grading assessments as follows: —		
Cambridge Street District	$840.86	
Cowperthwaite Street District . . .	281.61	
Franklin Street District	317.01	
Amounts carried forward	$1,439.48	$6,740.00

Amounts brought forward	$1,439.48	$6,740.00
For Sparks Street District	85.87	
Washington Street District	11,616.02	
Total, as per item No. 25 of receipts		13,141.37
		$19,881.37

EXPENDED.

For Estate in Franklin Street District, surrendered by J. Stacey Read . .	$13,201.79	
Labor and survey of lots	21.87	
Land, South Dock and Canal, surrendered by E. H. Luke	610.00	
Refund of grading assessments . .	112.64	
Total, as per item No. 37 of expenses		13,946.30
Balance unexpended		$5,935.07

Surrendered Estates (Care and Repair).

RECEIVED.

For Rents of estates, as per item No. 26 of receipts .	$3,375.34
Amount transferred to	150.00
	$3,525.34

EXPENDED.

For Agent, services of	$662.00	
Car tickets	7.75	
Drains, repairs	66.63	
Hardware and tools	27.82	
Labor	35.02	
Removing tenant	2.50	
Repairs, carpenters' work	506.66	
Repairs, general	120.36	
Repairs, masons' work	165.88	
Repairs, painting and glazing . . .	38.54	
Repairs, plumbing	115.86	
Stationery	6.35	
Amounts carried forward	$1,755.37	$3,525.34

Amounts brought forward	$1,755.37	$3,525.34
For Tax, city of Somerville	5.40	
Vaults, cleaning	55.00	
Water rates	1,248.44	
Whitewashing	18.35	
Total, as per item No. 38 of expenses		3,082.56
Balance unexpended		$442.78

Surrendered Estates (Sale Account).

RECEIVED.

For partial payment on estate, as per item No. 27 of receipts	$800.00

Tax, 1878, Corporation.

RECEIVED.

For amount received from Commonwealth, as per item No. 28 of receipts	$23,053.02

EXPENDED.

For amount paid Commonwealth, as per item No. 40 of expenses	51.11
Balance in favor of City	$23,001.91

Tax, 1878, National Bank.

RECEIVED.

For amount received from Commonwealth, as per item No. 29 of receipts	$16,395.11

EXPENDED.

For amount paid Commonwealth, as per item No. 39 of expenses	6,595.91
Balance in favor of City	$9,799.20

Tax, 1878, County.

EXPENDED.

For amount paid County of Middlesex, as per item No. 41 of expenses	$25,116.52

Tax, 1878, State.

EXPENDED.

For amount paid Commonwealth, as per item No. 42 of expenses	$34,770.00

Taxes, 1873.

Amount uncollected	$211.95

RECEIVED.

For amount collected from sundry persons, as per item No. 30 of receipts	211.95

Taxes, 1874.

Amount uncollected Nov. 30, 1878	$7,195.92

RECEIVED.

For amount collected from sundry persons, as per item No. 31 of receipts	647.83
Balance uncollected Nov. 30, 1879	$6,548.09

Taxes, 1875.

Amount uncollected Nov. 30, 1878	$11,523.32

RECEIVED.

For amount collected from sundry persons, as per item No. 32 of receipts	4,116.34
Balance uncollected Nov. 30, 1879	$7,406.98

Taxes, 1876.

Amount uncollected Nov. 30, 1878	$14,931.11
RECEIVED.	
For amount collected from sundry persons, as per item No. 33 of receipts	5,545.31
Balance uncollected Nov. 30, 1879	$9,385.80

Taxes, 1877.

Amount uncollected Nov. 30, 1878	$29,949.14
RECEIVED.	
For amount collected from sundry persons, as per item No. 34 of receipts	16,187.27
Balance uncollected Nov. 30, 1879	$13,761.87

Taxes, 1878.

Amount uncollected Nov. 30, 1878	$127,739.86
Amount since added	70.91
	$127,810.77
RECEIVED.	
For amount collected from sundry persons, as per item No. 35 of receipts	118,775.91
Balance uncollected Nov. 30, 1879	$9,034.86

Taxes, 1879.

Amount assessed, as per assessor's warrant	$869,359.00
RECEIVED.	
For amount collected from sundry persons, as per item No. 36 of receipts	774,006.72
Balance uncollected Nov. 30, 1879	$95,352.28

Tax Lien Account.

EXPENDED.

For Amount of real estate sold to city at tax sale, as per item No. 43 of expenses	$32,404.28

RECEIVED.

For Amount of tax titles, costs, and interest released by City, as per item No. 37 of receipts	2,929.73
Balance Nov. 30, 1879	$29,474.55

Water Works (Construction).

Amount appropriated		$8,000.00

EXPENDED.

For	Borings, experimental	$722.00
	Castings	28.71
	Civil engineer's expenses	71.78
	Engineer, expert, services	1,500.00
	Hydrant boxes	52.33
	Hydrants	291.70
	Labor, as per pay-roll	498.72
	Land damages	95.00
	Lathe and fittings	357.30
	Lead	68.99
	Meters	453.23
	Sled, pipe-yard	23.00
	Teaming	10.00
	Trees	182.00
	Valves	69.80
Total, as per item No. 44 of expenses		$4,424.56
Balance unexpended		$3,575.44

Water Works (Maintenance).

Amount appropriated	$2,440.00
Add amount transferred	23,560.00
Amount carried forward	$26,000.00

Amount brought forward		$26,000.00
RECEIVED.		
For Amount recovered on A. F. Fifield's bond, as per item No. 38 of receipts		1,250.00
		$27,250.00
EXPENDED.		
For Advertising	$25.25	
Analyses of water	75.00	
Auditing books	45.00	
Belting	32.69	
Boxes, meter, and gate	559.92	
Brick	10.40	
Car tickets and fares	125.00	
Clerical assistance in office	1,032.00	
Clerk of Board, salary	199.98	
Engine-house, painting	67.34	
Expressage and teaming	120.29	
Fertilizer	210.70	
Fuel	3,523.85	
Furniture repairs	10.24	
Gate-house, painting	26.00	
Gravel and stone	66.37	
Hardware and tools	268.45	
Harnesses and repairs	84.80	
Hay, grain, and straw	240.10	
Horse	100.00	
Horse-hire	20.00	
Horse-keeping	284.93	
Horse-shoeing	65.37	
Hose and packing	44.89	
Inspectors, services	1,158.00	
Labor, as per pay-roll	8,328.78	
Lime and cement	122.40	
Lumber	97.64	
Mason's work	26.88	
Meters, repairs	168.24	
Oil and waste	357.18	
Amounts carried forward	$17,497.69	$27,250.00

	Amounts brought forward	$17,497.69	$27,250.00
For	Paving and grading.	24.35	
	Pipes and fittings	779.25	
	Plugs, painting	23.70	
	Plumbing	22.20	
	Printing	76.38	
	Pump, use of	104.00	
	Rails and spikes	74.49	
	Registrar, J. W. Cotton, salary (13 months)	2,166.66	
	Rent of office and shop	600.00	
	Rent of safety vault	20.00	
	Rent of wharf	50.00	
	Repairs, general	187.14	
	Report, stenographic	25.00	
	Reservoir, repairs	1,909.78	
	Stand-pipe, painting	75.12	
	Stationery and blank books	175.04	
	Superintendent, Hiram Nevons, salary	1,800.00	
	Telephone, use of	20.00	
	Tools, repairs	178.48	
	Trees, planting	34.00	
	Wagons, repairs	120.80	
	Whitewashing	29.00	
Total, as per item No. 45 of expenses			25.993.08
Balance unexpended			$1,256.92

Water Works (Rates, Fines, &c.).

RECEIVED.

For amount of rates, fines, &c., as per item No. 39 of receipts		$167,375.51
Deduct amount transferred		160,000.00
		$7,375.51

EXPENDED.

For water rates refunded, as per item No. 46 of expenses		1,566.96
Balance unexpended		$5,808.55

Water Works (Supplies).

RECEIVED.

For supply pipes and fittings, as per item No. 40 of receipts	$2,883.17
Deduct amount transferred	1,000.00
	$1,883.17

EXPENDED.

For Amount refunded	$9.50	
Labor, as per pay-roll	698.70	
Supply pipes and fittings	826.00	
Total, as per item No. 47 of expenses		1,534.20
Balance unexpended		$348.97

REPORT

OF

THE CITY TREASURER.

OFFICE OF THE CITY TREASURER, CAMBRIDGE, DEC. 1, 1879.

To the Honorable City Council: —

The undersigned herewith presents the annual account of receipts and payments in the City Treasury Department for the year ending Nov. 30, 1879, from which it will be seen that the

Cash balance in the treasury, Nov. 30, 1878, was	$34,870.24
Amount received during the year ending Nov. 30, 1879, was	1,611,866.94
Total	$1,646,737.18
Payments during the year were	1,585,431.61
Leaving a balance in the treasury, Nov. 30, 1879, of	$61,305.57
Deducting *unpaid drafts*, as per Auditor's Report	2,423.50
there remains a balance, as per Auditor's ledger, of	$58,882.07

The account current, showing the payments and receipts for the different department accounts, is hereto appended.

Respectfully submitted,

WM. W. DALLINGER, *City Treasurer.*

City of Cambridge in Account Current from Dec. 1, 1878, to

Dr.

No.	To authorized payments, charged to City Accounts as follows: —	
1.	Abatements and Discounts	$60,373.44
2.	Bridges	2,639.73
3.	Bridges (West Boston, Canal, and Prison Point)	6,271.64
4.	Cambridge Public Library	5,948.57
5.	Cemeteries	9,393.18
6.	Engineering	5,871.70
7.	Fire Department	51,657.06
8.	Free Dispensary	1,000.00
9.	Health Department	1,314 28
10.	Incidental Expenses	29,694.34
11.	Interest	202,963.95
12.	Interest on Water Loan	92,282.50
13.	Lighting Streets	18,750.86
14.	Loan, Funded City	15,000.00
15.	Loan, Temporary	352,000.00
16.	Pauper Department	17,196.33
17.	Pauper Department (Almshouse)	15,771.68
18.	Pauper Department (House Offal)	5,729.28
19.	Police Department	59,784.62
20.	Salaries	20,895.81
21.	School Department (Drawing Schools)	722.17
22.	School Department (Evening Schools)	2,070.91
23.	School Department (Incidental Expenses)	1,181.58
24.	School Department (Salaries)	132,570.49
25.	School Department (Text Books and Stationery)	3,200.91
26.	School Houses (Care and Repairs)	22,463.00
27.	Sewers (Construction)	4,952.47
28.	Sewers (Maintenance)	2,857.10
29.	Shade Trees and Public Grounds	3,341.68
30.	Sinking Funds	164,865.00
31.	Sinking Fund of Water Works	45,855.00
32.	State Aid	22,662.37
33.	Stationery and Printing	3,281.61
34.	Street Department (Construction)	94.75
35.	Street Department (Paving)	5,079.64
36.	Street Department (Repairs)	56,435.01
37.	Street Department (Watering)	15,504.12
38.	Surrendered Estates	13,946.30
39.	Surrendered Estates (Care and Repairs)	3,069.40
40.	Tax (National Bank)	6,595.91
41.	Tax (Corporation)	51.11
42.	Tax (County)	25,116.52
43.	Tax (State)	34,770.00
44.	Tax Lien Account	6,657.78
45.	Water Works (Construction)	4,297.10
46.	Water Works (Maintenance)	26,036.89
47.	Water Works (Rates, Fines, &c.)	1,679.62
48.	Water Works (Supplies)	1,534.20
	Total payments	$1,585,431.61
	Cash balance in the Treasury, Nov. 30, 1879	61,305 57
		$1,646,737.18

Nov. 30, 1879, with William W. Dallinger, *City Treasurer.*

Cr.

No.	By Cash received and credited to City Accounts as follows: —	
2.	Bridges (West Boston, Canal and Prison Point)	5.50
3.	Cambridge Public Library	2,486.19
4.	Cemeteries	8,897.27
5.	Cemetery Fund	300.00
6.	Fire Department	220.37
7.	Incidental Expenses	23,014.10
8.	Interest	6,275.79
9.	Lighting Streets	30.61
10.	Loan (Temporary)	352,000.00
11.	Pauper Department	5,225.94
12.	Pauper Department (Almshouse)	2,266.82
13.	Pauper Department (House Offal)	4,411.20
14.	Pike, James	1,000.00
15.	Police Department	3,334.11
16.	School Department (Salaries)	1,421.33
17.	Sewers (Construction)	8,049.73
18.	Shade Trees and Public Grounds	82.40
19.	Sinking Funds, Commissioners of	15,000.00
20.	State Aid	27,598.97
21.	Street Department (Construction)	852.50
22.	Street Department (Paving)	83.52
23.	Street Department (Repair)	265.13
24.	Street Department (Watering)	8,594.04
25.	Surrendered Estates	13,141.37
26.	Surrendered Estates (Care and Repair)	3,375.34
27.	Surrendered Estates (Sale Account)	800.00
28.	Tax (Corporation)	23,053.02
29.	Tax (National Bank)	16,395.11
30.	Taxes of 1873	211.95
31.	Taxes of 1874	647.83
32.	Taxes of 1875	4,116.34
33.	Taxes of 1876	2,527.71
34.	Taxes of 1877	8,961.71
35.	Taxes of 1878	118,775.91
36.	Taxes of 1879	774,006.72
37.	Tax Lien Account	2,929.73
38.	Water Works (Maintenance)	1,250.00
39.	Water Works (Rates, Fines, &c.)	167,375 51
40.	Water Works (Supplies)	2,883.17
	Total Receipts	$1,611,866.94
	Cash balance in the Treasury, Dec. 1, 1878	34,870.24
		$1,646,737.18

WM. W. DALLINGER, *City Treasurer.*

REPORT

OF THE

COMMISSIONERS OF THE SINKING-FUNDS.

To the Honorable the City Council:—

THE undersigned, Commissioners of the Sinking-Funds of the City, in compliance with section 8 of an ordinance passed Dec. 22, 1875, herewith submit their Fourth Annual Report, showing the present condition of the funds to be as follows, viz: —

Amount of the funds, Dec. 1, 1878		$828,699.05
Received from the city under ordinance passed Dec. 22, 1875.		164,865.00
Received interest on the funds for the year		48,125.93
Received premium on U. S. 4½ bonds exchanged for U. S. 4's		6,776.62
		$1,048,466.60
Less amount paid city bonds due July 1, 1879 .	$15,000.00	
„ „ premium on bonds purchased .	4,680.50	
„ „ accrued interest on securities purchased	3,277.49	22,957.99
Total amount of funds, Dec. 1, 1879 . .		$1,025,508.61
Accrued interest on funds, Dec. 1, 1879 .		17,546.66
Actual value of funds, Dec. 1, 1879 . .		$1,043,055.27

Said fund is invested as follows, viz.: —

Bonds of the City of Cambridge at par, 6's				$536,400.00
„ „ „ registered, at par, 5's				120,000.00
„ „ Providence	„	4½'s		108,000.00
„ „ Boston	„	4's		50,000.00
„ „ Chelsea	„	5½'s		19,000.00
„ „ U. S. Government	„	4's		144,400.00
„ „ „ „	„	5's		11,000.00
„ „ Town of Arlington	„	5's		6,000.00
„ „ „ Winchester	„	5's		5,000.00
Notes „ „ Woburn	„	5's		20,000.00
„ secured by mortgage 6's				5,033.84
Cash on hand				674.77
				$1,025,508.61

The fund has now reached the sum of upwards of a million of dollars. During the past four years $182,000 of the city debt has matured, and been paid by the Commissioners. The fund has increased during the year, after deducting $15,000 of city bonds paid July 1, $196,809.56, leaving the amount of fund $1,025,508.61. The average rate of interest on the securities as now invested is $5\frac{29}{100}$ per cent.

Respectfully submitted,

CHAS. H. SAUNDERS,
ROBT. DOUGLASS,
JOS. A. HOLMES,
JOHN M. TYLER,
FRANK A. ALLEN,
K. S. CHAFFEE,

Commissioners of the Sinking-Funds of the City.

Cambridge, December 12, 1879.

REPORT

OF THE

TRUSTEES OF THE SINKING-FUND OF THE CAMBRIDGE WATER WORKS.

THE Trustees of the Sinking-Fund of the Cambridge Water Works respectfully submit the following Report: —

The amount of the fund, Nov. 30, 1878, was		$291,955.46
Received from the City of Cambridge under a provision of the ordinance passed Oct. 4, 1876, the same being three per cent on amount of outstanding water-loan bonds . .		45,855.00
Received interest on investments		16,955.05
Received discount on bonds purchased at less than par . .		3.13
		$354,768.64
Amount paid as accrued interest on bonds purchased	$4.37	
Amount paid as premium on bonds purchased for investment	1,296.25	1,300.62
Amount of the fund, Nov. 30, 1879		$353,468.02

The amount of the Fund as above given is accounted for by the following list of investments comprising the same, viz.: —

Cambridge water-loan bonds at par . . .	$207,900.00	
Cambridge low-land loan „ „	4,000.00	
City of Providence „ „	47,000.00	
„ Fall River „ „	2,000.00	
„ Charlestown, (Boston) bonds at par .	1,000.00	
U. S. Government 4 %	37,000.00	
U. S. Government 5 % bonds at par . . .	54,500.00	
Cash on hand	68.02	$353,468.02

The increase of the Fund during the year has been $61,512.56.

All the negotiable securities belonging to the Fund are deposited in one of the safety vaults in Boston.

SAM'L L. MONTAGUE,
GEO. S. SAUNDERS,
WM. W. DALLINGER,
} *Trustees of the Sinking-Fund of the Cambridge Water Works.*

REPORT

OF THE

JOINT STANDING COMMITTEE ON PUBLIC PROPERTY.

DURING the year, your committee has pursued the same general policy as in the previous year, endeavoring to keep the expenses of the several departments within the smallest limits practicable, consistent with proper care and repair of the public property under its charge; and it has succeeded in keeping its expenditures within the limit of the several appropriations therefor, while at the same time the property is, it believes, in better condition, generally, than at the commencement of the year.

Public Squares.

The general oversight and care of the common, and public squares and parks, has been assumed by members of the committee residing nearest their respective localities, thereby again for this year avoiding the expense to the city of the services of a city forester. It is believed that the condition of the city's property of this description will compare favorably with that of any previous time; and, although the appropriation was somewhat restricted, some permanent improvements and additions have been made.

The appropriation was	$4,200.00
Amount expended	3,599.43
Balance unexpended	$600.57

A flag-staff has been erected and other improvements made at Fort Washington, at a cost of about $400.

The square at Holmes Place has been graded at considerable cost, and several other improvements, too numerous to mention in detail, have been made in squares in different parts of the city.

The city's stock of trees for transplanting has been somewhat depleted by the necessary drafts upon it for different localities on the streets and parks; and also for the ornamentation of Tudor Park, on the borders of Fresh Pond. Your committee recommends the purchase of an additional supply of 300 or 400 young maple trees, our present supply being reduced to about 225 in number.

Schoolhouses and Public Buildings.

The amount appropriated for care and repair of schoolhouses was	$20,500.00
Transferred from other appropriations	2,600.00
	$23,100.00
Amount expended	22,484.32
Balance unexpended	$615.68

Of the whole amount expended, the sum of $5,972.92, was for fuel for the schools. Of the remaining expenditure, the largest single item was for a greatly needed improvement in the sanitary condition of the Shepard Schoolhouse, where your committee has caused to be constructed a new, and we believe a very desirable, style of sanitarium in the schoolhouse yard, at a cost of about $1,500, which is kept sufficiently warmed by the surplus steam from the heating apparatus in the schoolhouse at no additional expense; and the premises are at all times kept in a healthful and cleanly condition. The inspection of the premises by all persons interested in sanitary improvement is invited. Thorough repairs have been made on several of the school-buildings, among the principal of which may be mentioned, that of the interior of the High Schoolhouse, and the exterior painting and repairs of the Holmes, Mason, and Dunster Schoolhouses; and also somewhat extensive repairs upon the Willard Schoolhouse, which was damaged by lightning and a severe gale on Wednesday, July 16. It became necessary also to purchase six new furnaces during the year. Your committee is of the opinion that no greater appropria-

tion for the care and repair of the schoolhouses and public buildings than last year's will be required to meet the expenses for the next year, excepting the addition of $700.00 for the cost of constructing a fire-proof vault in the basement of the City Hall, for the preservation of the town and city records, an order for which has already been adopted by the City Council, and the work thereon has been commenced.

Public Lands.

Upon a critical examination of previous city reports, as regards the measurement of the city lands, your committee found that many erroneous quantities are therein given, and, in compiling its detailed report herewith submitted, has endeavored to correct all such former errors, and believes that all definitely stated quantities of land, as herein made, will be found correct. A carefully prepared schedule of the lands owned by the city, and available for sale, is appended to this report, together with an estimate of their marketable value; and your committee expresses the opinion that, upon a revival of business in real estate, it would be advisable for the city to use all reasonable effort, consistent with a due regard for the interests of our citizen real-estate owners, to dispose of such property; not recommending, however, forced sales at a sacrifice, but such action as will enable the city to avail itself of any favorable opportunity to realize the advantages of a tax income, of a curtailment of its interest account, and expenditure for care and repairs. This suggestion is particularly applicable to the several surrendered estates, in regard to which it may be said that the property is of such a character that constant repairs are required to keep the houses in a tenantable condition.

Surrendered Estates.

Your committee has continued to employ Mr. J. R. Fairbairn to let the property and collect the rents. He has conducted the business in so careful and economical a manner as allows the showing of the following results, namely: —

Amount of appropriation for care and repair of surrendered estates	$3,150.00
Expenses	3,082.56
Balance unexpended	$67.44

Amount received for rents	$3,375.34
Expenses	3,082.56
Excess of receipts over expense	$292.78

Of the expenditures entering into this year's account, the sum of $627.00 was for water rates due in 1878, and properly belonging in that year's account, as shown by the report for 1879.

During the year no changes have occurred, except the sale of the Mullen estate on Green Street, and the O'Brien estate on Hancock Street. A settlement has been effected with J. Stacey Read, and the sum agreed upon has been paid to him. The only remaining estates within the knowledge of your committee, which the city will be called upon to pay for, are, that of B. F. Davies in Ward Three, near Winter Street, on which the amount of damage is still unadjudicated; and the "Bancroft Estate" in Ward One, situated on Mount Auburn and Willard Streets. In the latter case an award has been decreed by the courts, but payment has been deferred, pending further negotiations.

Janitors of Schoolhouses and Public Buildings.

It has become the custom of late years for the Committee on Public Property to make some reference in its annual report to these employés of the city. No occasion exists at the present time for any extended notice of this department. The janitors have generally performed their duties faithfully, and to the acceptance of all interested. Some changes were made in the early part of the year, in accordance with numerously signed petitions from citizens of the several wards, by way of dividing the labor among a greater number of persons; but your committee fails to see any advantage resulting therefrom to the city, and would not counsel any further changes in that direction.

In closing, the members of the committee desire to say that they have felt keenly the loss by death during the year of two of their colleagues, — that of Councilman Rhoades from Ward Two, occurring early in January, and that of Councilman Lamson in the month of July, — and would sincerely add their testimony to their undoubted ability, energy, integrity, and moral worth.

SCHEDULE OF PROPERTY

owned by the city at the close of the year 1879, all of which is under the charge of this Committee, except such as is specially noted.

Almshouse Building.

Foot of Tannery Street, Ward Five, with $14\frac{242}{1000}$ acres of land in Cambridge, $22\frac{5}{1000}$ acres of land in Somerville, and $\frac{1}{10}$ acre in Arlington. Total area $36\frac{1}{3}$ acres. Also stone ledge located on Almshouse land. (In charge of Board of Overseers of the Poor.)

Cemeteries.

Cambridge Cemetery. Foot of Coolidge Avenue, containing 40.8129 acres of land. (In charge of Board of Commissioners of Cambridge Cemetery.) Included in their report.

Burial Ground. Garden Street, junction of North Avenue, containing 88,858 square feet of land.

Commons and Public Squares.

Cambridge Common. Garden Street, North Avenue, and Waterhouse Street. Area 370,785 square feet.

Public Square. Between Waterhouse Street and North Avenue. Area 13,180.7 square feet.

Arsenal Square. Garden and Chauncy Streets, and Concord Avenue. Area 3,189 square feet.

Public Square. Between Waterhouse Street and Garden Street. Contents 363 square feet.

Public Square. Between Holmes Place and Cambridge Street. Contents 20,956 square feet.

Public Square. North Avenue, corner of Kirkland Street, on south corner. Contents 23,074 square feet.

Public Square. North Avenue, corner of Kirkland Street, on north corner. Contents 33,357 square feet.

Common. Junction Broadway and Main Street. Contents 3,153 square feet.

Broadway Park. Broadway, corner of Norfolk Street. Contents 107,181 square feet.

Fort Washington. Waverley Street. Contents 42,123 square feet.

Common. Junction of Pleasant and River Streets. Contents 1,569 square feet.

Hastings Square. Brookline, Chestnut, and Henry Streets. Area 29,999 square feet.

Dana Square. Lake, Magazine, Lawrence, and Niagara Streets. Area 33,531 square feet.

Winthrop Square. Brighton, Winthrop, and Mount Auburn Streets. Area 10,236 square feet.

Public Square. In front of Universalist church, junction of Main and Front Streets. Area 1,829 square feet.

City Lands.

Lot on Franklin, Auburn, and Sydney Streets, containing 79,920 square feet.

Lot on Auburn, Pilgrim, and Sydney Streets, containing 79,610 square feet, with house and shed thereon, owned by Water Works. (Leased to Cambridge Water Works.)

Lot on Sydney Street, east side, near Auburn Street, containing 26,172 square feet.

Lot on Cambridge, corner Portland Street, containing 111,697 square feet.

Lot, junction of Arrow and Main Streets, containing 872 square feet.

Lot, junction of Hampshire Street and Broadway, containing 614 square feet.

Lot on Gore Street, in rear of Gore Schoolhouse, containing 775 square feet.

Gravel Pit.

Gravel Pit in Belmont, Concord Avenue, containing 471,148 square feet. (In charge of Committee on Roads and Bridges.)

City Buildings.

Ward One Building, Brattle Square, and land, 16,153 square feet.

Central Square Building, junction Western Avenue and Green Street, and 13,028 square feet of land.

City Hall, Main Street, corner Pleasant Street, and 10,181 square feet of land.

City Stables, Norfolk, Hampshire, and Tremont Streets, and 72,661 square feet of land. (In charge of Committee on Roads and Bridges.)

Police Station, Norfolk Street, on City Stable lot.

Engine-Houses.

House No. 1, Eliot Square, corner Mount Auburn Street, included with Ward One Building.

House No. 2, Main Street, near Winsor, and land, 3,449 square feet.

House No. 3, Gore and Fourth Streets, and land, 4,220 square feet.

House No. 4, North Avenue, near corner Russell Street, and land, 6,305 square feet.

House No. 5, Hampshire Street, corner Inman, and land, 6,000 square feet.

House, Old, junction Western Avenue and River Street, and land, 1943½ square feet. (Leased as a carpenter's shop.)

House, Hook and Ladder No. 2, Cambridge, corner of Portland street, land included in city lands.

Schoolhouses.

Allston, Boardman Street, 15,193 feet of land.

Agassiz, Oxford Street, corner Sacramento Street, 19,689 feet of land.

Boardman, Winsor Street, corner School Street, 10,018 feet of land.

Bridge, Pioneer Street, Lower Port, 4,646 feet of land.

Dunster, Concord Avenue, near Sparks Street, and 10,000 feet of land.

Dana, Centre Street, and 14,317 feet of land.

Felton, Amory Street, corner Summer Street, and 15,090 feet of land.

Gore, Gore Street, between Third and Fourth Streets, and 9,900 feet of land.

Gannett, Columbia Street, between Lincoln and Cambridge Streets, and 8,800.7 feet of land ; also, schoolhouse lot adjoining, containing 18,870 feet.

Harvard (Grammar), Broadway, corner Inman Street, and 20,494 feet of land.

Harvard (Primary), Harvard Street, near Prospect Street, and 10,050 feet of land.

High School, Fayette Street, Antrim Street, and Broadway, and 37,828 feet of land.

Holmes, Hilliard Street, and 11,182 feet of land.

Mason, Front Street, corner Jennings Street, and 10,000 feet of land.

Otis, Otis Street, between Fifth and Sixth Streets, and 8,270½ feet of land.

Putnam, Otis Street, corner Fourth Street, and 10,000 feet of land.

Quincy, Mason Street, corner James Street, and 8,469 3/10 feet of land.

Reed, Reed Street, Ward Five, and 12,000 feet of land.

Riverside, Putnam Avenue, Ward One, and 11,198 feet of land.

Sargent, Broadway, corner Winsor Street, and 10,000 feet of land.

Shepard, North Avenue, near Russell Street, and 14,755 feet of land.

Thorndike, Thorndike Street, corner Sixth Street, and 10,027 feet of land.

Willard, Lake, Lawrence, and Niagara Streets, and 20,079 feet of land.

Webster, Upton Street, and 25,839 feet of land.

Wyman, Spruce Street, corner Groveland Street, and 14,346 8/10 feet of land.

Washington, Brattle Street, corner Farwell Place, and 14,951½ feet of land.

Surrendered Estates.

These estates have been surrendered to the city under the provisions of the statutes relating to low-land filling.

This list gives by whom surrendered, and location of property.

CAMBRIDGE STREET DISTRICT.

Blanchard, Walter S. Jefferson Street. House and 1,756 feet of land.

Donnelly, James, Heirs of. Hunting and Harding Streets. House and small barn, and 4,046 feet of land.

Horigan, Jeremiah. Warren Street. Two houses and 6,489 feet of land.

Langley, Samuel. Hunting and Harding Streets. 1,676 feet of land on Hunting Street; house and 1,522 feet of land, No. 47 Harding Street; house and 1,451 feet of land, No. 45 Harding Street.

Madden, D. & H. A. Willow and Harding Streets. House and 6,063 feet of land.

Nourse, Susan M. Porter and Jefferson Streets. House and 3,758 feet of land, Porter Street; lot of land, 7,756 feet, Porter Street; lot of land, 11,202 feet, Porter and Jefferson Streets.

Rafferty, B. Cambridge and Jefferson Streets. Old building, and 24,934 feet of land.

Taunton Savings Bank. Corner McCabe and Jefferson Streets. Block of three houses, and 3,375 feet of land, McCabe and Jefferson Streets; block of two houses, and 2,600 feet of land, McCabe Street; also, passage-way in rear, 178 square feet.

MILLER'S RIVER DISTRICT.

Callahan, Mary. Rear of Winter Street. Lot of land, containing 2,750 square feet.

Dale, Thomas J. Rear of Winter Street. Three old buildings, and 5,220 feet of land.

Davies, Benjamin F. Rear of Gore Street. Lot of land containing 12,125 square feet. (Unadjusted.)

Moulton, H. & C. W. H. Rear of Gore Street. Lot of land containing 7,800 square feet.

Tibbetts, Israel. Bridge Street. Lot of land containing 3,765 feet.

COWPERTHWAITE STREET DISTRICT.

Crane, Ann, Heirs of. Grant Street and De Wolf Street. Lot of land containing 16,350 square feet.

Kneeland, Henry. Grant and Cowperthwaite Streets. House and 4,000 feet of land on Cowperthwaite Street; lot of land, 4,000 feet, on Grant Street.

Winthrop, William, Heirs of. Athens Street. Lot of land, west side, 6,750 feet; lot of land, east side, 20,360 feet.

SPARKS STREET DISTRICT.

Bancroft, George. Estates on Mount Auburn and Willard Streets. Double house, 185 and 187 Mount Auburn Street, and 3,360 feet of land; double house, 197 and 199 Mount Auburn Street, and 2,870 feet of land; double house, 31 and 33 Willard Street, and 3,080 feet of land; double house, 35 and 37 Willard Street, and 3,080 feet of land; double cottage, 4 and 6 Dinsmore Court, and 1,613 feet of land; double cottage, 8 and 10 Dinsmore Court, and 1,613 feet of land.

Bancroft, George. Dinsmore Court. Double cottage, Nos. 12 and 14, and 1,613 feet of land; double cottage, Nos. 13 and 15, and 1,613 feet of land.

An award has been made for the above-named estates, but payment has not been made by the City.

WASHINGTON STREET DISTRICT, SOUTH DOCK AND SOUTH CANAL.

Bent Heirs. Dock and Sixth Streets; east lot containing 5,224 feet; west lot containing 5,959 feet; rear lot containing 32,060 feet.

Hunt, Fanny E. Harvard Street, north side, easterly of the estate of Bridget Manning; lot containing 6,966 feet.

FRANKLIN STREET DISTRICT.

Ahern, John. Rear Franklin, between Franklin and Green Streets. Two houses and 2,425½ feet of land.

Biggin, John. Franklin Street. Lot of land containing 3,004 square feet.

Brassill, Daniel C. 29 Franklin Street. House and 1,920 feet of land.

Chamberlain, N. & G. D. Green Street, near Vernon. Double house and about 4,000 feet of land; lot of land opposite Vernon Street, containing 5,195 feet.

Daily, Cornelius. Hancock Street, near Green. 3,467 feet of land.

Drinan, Maurice. Kinnaird Street. Lot of land about 3,927 feet.

Eagan, Martin. Kinnaird Street. Single house and about 2,500 feet of land; double house and 4,527 feet of land.

Halloran, Mrs. Mary. 249 Franklin Street. Lot of land, 3,084 feet.

Johnston, Thomas A. Green Street. Lot of land 4,860½ feet.

Kelley & McKinnon. Howard Street. Two lots of land, 7,200 feet.

Lonergan, Michael. Howard Street. Lot of land, 3,600 feet.

Lynch, Richard. Hayes Court. Double house and 4,325 feet of land.

McDonald, Martin. 105 Kinnaird Street. Large house, small house, and 4,300 feet of land.

Mara, Thomas. Hayes Court. Double house and 4,440 feet of land.

Murdock, Heirs of Hannah S. Land as per their plan. Western Avenue, new street from Western Avenue to Hews Street, lots 1 to 45 inclusive, containing 52,059 square feet; Franklin Street, lots Nos. 13, 14, 15, containing 11,500 square feet; Kinnaird Street, lots 16 to 21 inclusive, containing 22,240 square feet; Jay and Kinnaird Streets, lot 27 and about one-half of lot 26, contents 2,810 square feet. Total area, 88,609 square feet.

Murdock, Walter H. and Mary L. Land as per their plan. Hews Street and new street. Lots 16 to 26 inclusive (about one-half of latter lot); lots 29 to 45 inclusive, — in all 80,273 square feet.

Murphy, Daniel. Hancock Street. Two houses and about 3,225 feet of land.

Perkins, John P. Bay Street. House and 1,880 feet of land.

Quilter, Michael. 238 Franklin Street. House and 2,752 feet of land.

Read, J. Stacey. Franklin Street. Lot of land containing 21,128 feet; lot of land containing 3,833½ feet. Kinnaird Street, lot of land containing 17,646 feet. Howard and Kinnaird Streets, lot of land containing 8,174 feet. Total, 50,781½ feet.

Ready, Martin. 236 Franklin Street. House and 4,300 feet of land.

Robbins, J. M. Western Avenue and Howard Street. Wooden block on Western Avenue cor. Howard Street, and 3,000 feet of land. House on Howard Street, rear of Western Avenue, and 2,000 feet of land.

Shea, John. Soden and Franklin Streets. Two houses and 4,358 feet of land.

Sheehan, Mrs. Mary. Franklin Street. House and 3,917 feet of land.

Thresher, J. M. Jay Street, westerly side, lots 28 to 37 inclusive, containing 38,313 square feet. Howard and Kinnaird Streets, easterly side, lots 38 to 46 inclusive, 32,454 square feet; westerly side Jay and southerly side Kinnaird Street, lots 58 to 63 inclusive, 20,383 square feet; two corner lots on westerly side of Howard Street, as per new plan, near Western Avenue, 29,935 square feet. Total, 121,086 square feet.

Walsh, Patrick. 150 Green Street. House and 4,777 feet of land.

Wildes, Asahel W. Corner of Bay and Kinnaird Streets. House and 2,162 feet of land.

WHARVES AND LANDINGS.

Public Landing, foot of Bath Street, area unknown. *Public Landing*, south of Mount Auburn Street, area unknown. Each has a frontage of 30 feet on the river.

City Wharf, Main Street, opposite Harvard Street, 13,680 square feet. Also, 162,379 feet flats opposite said wharf, not appraised.

WATER WORKS PROPERTY.

Old Engine-House, foot of Lakeview Avenue, and about 37,640 feet of land.

New Engine-House, opposite foot of Lexington Avenue, and 90,414 feet of land.

Fresh Pond, lands bordering on, area unknown.

Little Pond, lands bordering on, area unknown.

Reservoir, Reservoir Street, corner High Street, and 86,920 feet of land. All the Water Works property is in charge of the Cambridge Water Board, and no part thereof is included in any appraisals made by this committee.

Recapitulation of Areas.

Kind of Property.	Square feet.	Acres.
Almshouse lands	1,583,289.4	36.347
Cambridge Cemetery	1,778,511.24	40.829
Burial Ground, Ward One	88,858.	
Commons and Public Squares	694,535.4	
City Lands (salable)	299,660.	
City Gravel Pit Land in Belmont	397,417.7	9.123
Occupied by City Buildings	112,023.	
" " School-houses	367,146.	
" " Engine-houses	21,917.	

Surrendered estates, lands, —

	Square feet.	
Cambridge Street District	76,806	
Miller's River "	31,660	
Sparks Street "	18,842	
Cowperthwaite Street District	51,460	
Washington " "	50,209	
Franklin " "	435,895	
Total in all the Districts	664,872.	
City Wharf Land	13,680.	
City Flats, opposite City Wharf	162,379.	
Lands occupied by Cambridge Water Works, exclusive of lands bordering on Fresh and Little Ponds	214,974.	
Total	6,399,262.74	160.68

Schedule

Of salable City Lands, included elsewhere in this report, with their appraisal, as made by the Committee on Public Property.

Lot on Franklin, Auburn, and Sydney Streets, 79,920 feet	$19,800.00
Lot on Auburn, Pilgrim, and Sydney Streets, 79,610 feet	15,922.00
Lot on Sydney Street, east side, near Auburn Street, 26,172 feet	3,905.10
Lot on Cambridge, corner Portland Street, 111,697 feet	39,169.10
Lot, junction of Arrow and Main Streets, 872 feet	348.80
Flats opposite City Wharf, Lower Port, 162,379 feet (not appraised).	
Total as appraised	$79,145.00

Your committee has made an appraisal in detail of all the property mentioned in the foregoing list, except such as is in charge of the Cambridge Water Board, the aggregates being as follows: —

City Buildings, Land, and Furniture	$262,347.50
Schoolhouses, " "	576,266.50
Salable City Land	79,145.00
Surrendered Estates	179,181.53
Almshouse and Land	45,000.00
Wharf at Lower Port	7,000.00
Gravel Pit	4,000.00
Personal property used in connection with Public Squares including trees on hand	475.00
Total	$1,153,415.53

Respectfully submitted,

JOSHUA G. GOOCH,
BENJ. F. DAVIES,
GEORGE W. GOODNOW,
MICHAEL CORCORAN,
EDWARD T. NICHOLS.

Committee on Public Property.

ANNUAL REPORT

OF

THE BOARD OF HEALTH.

CAMBRIDGE, Dec. 31, 1879.

To the Honorable the City Council: —

AGREEABLY to the requirements of the city ordinances, this Board herewith transmits a report of its receipts and expenditures during the financial year ending Nov. 30, 1879: —

Amount of appropriation		$2,000.00
Expenditures.		
Advertising	$30.75	
Analyses of water	30.00	
Car tickets	45.00	
Directory	2.50	
Expressage	2.50	
Labor	5.40	
Postage and stamps	10.00	
Printing	39.65	
Salary of Health Officer	999.99	
Salary of Clerk of Board	137.49	
Stationery	12.80	
		$1,316.08
Balance unexpended		$684.92

By direction of the Board of Health.

JOHN McDUFFIE, *Clerk.*

To the City Council of the City of Cambridge: —

In accordance with the provisions of the statute establishing boards of health, we present our Second Annual Report for the year ending Dec. 31, 1879.

The hearing of complaints, the granting of licenses, and orders for the abatement of nuisances, have occupied a large part of our time. The following table shows the character and number of the nuisances abated: —

Vaults emptied	207
" built	4
" repaired	10
" rebuilt	11
Cesspools emptied	3
" built	2
Stagnant water	7
Stagnant water in cellars	3
Dead animals buried	36
Defective house-drainage	40
Houses connected with sewers	8
Filthy cow-stables	3
" yards	7
" cellars	3
Manure	5
Offal	3
Swine	3
Filthy slaughter-house	1
Sundries	6
Total	362

Dr. E. R. Cogswell, the efficient Health Officer of the Board, to whose intelligent co-operation we owe so much, resigned his position Dec. 1. We have appointed in his stead Dr. A. F. Holt.

Of the various subjects to which allusion was made in our last report, one still remains under consideration. We have taken no action as yet upon the manner in which private drains shall be connected with public sewers. As this action, when taken, will probably be attended by very serious changes in the present system, it has been thought advisable that concerted action should be

taken by the Boards of Health of Boston and neighboring cities. Steps have already been taken to bring about such an arrangement, and we hope that we may be able, during the coming year, to put in force some regulations in regard to this most important matter. Our experience satisfies us that the troubles generally supposed to come from defective sewers are in most cases traceable to very gross defects in house-drainage, and to improper forms of connection with the public sewers.

We call your attention to the fact that a complaint made more than a year ago by the Board of Health of the city of Somerville, as to the filthy condition of Alewife Brook, has been placed on file by consent of that board, awaiting the report of the special Committee on Water Supply of this city. That report has at last appeared, and we heartily commend the suggestions therein contained in regard to the purification of Alewife Brook. We wish also to call your attention to the growing need of proper drainage for the territory about McDonald's stone-yard. This need would be met by the construction of the sewer recommended in the above report. The present drainage of this territory is through Mt. Auburn cemetery, by a water-course of insufficient capacity, the use of which may at any time be prohibited.

This sewer, while relieving Alewife Brook, will carry to Charles River a very large amount of animal matter, and will greatly increase the pollution of the river, will add to the noxious deposits on the flats of the Charles River basin, and hasten on the time when this city, with adjoining municipalities, will be compelled to construct an intercepting sewer for the north bank of Charles River.

The discreditable condition of the privy vaults connected with the Shepard Grammar Schoolhouse has been remedied by their entire removal, and the substitution therefor of a neat building containing sluice-vaults of improved construction, regularly flushed by water. It is to be hoped that the Washington Grammar Schoolhouse may receive the same attention.

We have made a new contract with James Wyman for three years from Dec. 1, 1879, for the removal of night-soil and the emptying of cesspools. By the new contract all work, when practicable, is to be done by the odorless process at a uniform charge, for all seasons of the year, of four dollars ($4) per load of

eighty (80) cubic feet. As this work will now be done in the daytime, we expect to obtain a more effective service and relief from the disgusting odors hitherto inseparable from work of this sort.

Mr. Wyman has not yet secured the necessary apparatus, but expects to be able to begin work under the new contract within a few weeks. Till that time the work is to be done in the old way and on the former scale of prices.

We are able this year to present tables showing all the cases of scarlet fever, diphtheria, and typhoid fever. The physicians of the city have in all cases heartily seconded the efforts of this Board to obtain full statistics of these diseases. Small-pox is still absent from the list, the last reported death in the city from this disease having occurred in 1873.

The number of deaths in the city during the year 1879 was 945, for the year 1878 the number was 1011.

The waters of six wells, taken from localities where diphtheria has prevailed more or less, have been analyzed, and the results are given in the accompanying table. They are not good wells. Several of them are very bad, — the best far inferior to Fresh Pond water. We do not wish to be understood as asserting that the use of these wells has produced diphtheria, but prefer to place them on record as additional proof of the statement made in the report of last year, that it is almost hopeless to expect to obtain a good well water within the limits of the city.

In 100,000 Parts.

Number.	Locality.	Ward.	Inorganic Matter.	Organic Matter.	Total Residue.	Free Ammonia.	Albuminoid Ammonia.	Total Ammonia.	Remarks.
1	Jackson St. . .	5	19.00	10.00	29.00	.0240	.0060	.0300	Nitrates distinct.
2	Spruce St. . . .	5	20.00	14.00	34.00	.0270	.0060	.0330	Nitrates present.
3	North Avenue	5	21.50	2.50	24.00	.0050	.0040	.0090	No Nitrates. Chlorine.
4	Somerset St. .	4	226.50	16.50	243.00	.0586	.0096	.0682	Chlorine and sulphate of lime abundant.
5	Harvard St. . .	2	19.00	12.00	31.00	.0060	.0120	.0180	
6	Inman St. . . .	2	32.50	7.00	39.50	.2560	.0640	.3200	Chlorine. Sulph. of lime.

D. H. THURSTON,
GEORGE F. PIPER,
H. P. WALCOTT,
Board of Health.

Causes of Death in 1879.

CLASSIFIED ACCORDING TO THE NOSOLOGY ADOPTED IN THE REGISTRATION REPORTS OF MASSACHUSETTS.

DISEASE.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Scarlet Fever	6	1	7	..	..	3	2	..	..	..	..	..	19
Diphtheria	6	4	4	7	5	3	8	..	4	6	6	8	61
Croup	..	1	3	2	..	..	..	..	1	2	2	1	12
Whooping-cough	1	..	..	4	.	1	1	1	..	..	1	..	9
Typhoid Fever	1	..	..	..	..	1	1	1	..	..	..	3	7
Erysipelas	..	1	1	1	..	1	..	..	..	..	..	..	4
Metria	..	1	2	..	..	..	..	..	..	..	..	1	4
Dysentery	..	..	..	..	..	..	3	1	7	4	..	..	15
Diarrhœa	..	..	..	1	..	2	1	3	2	6	..	2	17
Cholera Infantum	..	..	..	..	1	..	19	29	10	3	2	..	64
Intermittent Fever	..	..	..	1	..	..	..	..	..	..	..	..	1
Rheumatism	1	..	..	1	..	..	..	..	..	..	..	..	2
Cerebro-spinal Meningitis	..	..	1	..	..	..	..	1	..	..	..	..	2
Syphilis	1	..	..	..	..	1	..	..	1	..	..	..	3
Privation	..	..	1	..	.	..	2	..	..	1	..	..	4
Dropsy and Anæmia	2	..	..	1	..	2	..	..	..	..	..	..	5
Cancer	2	4	2	..	1	1	1	3	1	..	2	2	19
Mortification	..	..	..	..	..	..	..	2	..	..	..	..	2
Scrofula	..	1	..	..	1	2	..	..	..	..	..	..	4
Tabes Mesenterica	..	..	1	..	..	..	..	..	..	..	..	..	1
Phthisis	12	16	15	14	14	16	11	16	16	15	5	13	163
Hydrocephalus	3	..	4	1	..	2	4	3	2	4	1	1	25
Meningitis	1	3	..	..	1	..	..	2	2	1	4	2	16
Apoplexy	1	2	2	1	1	2	..	2	1	3	..	1	16
Paralysis	2	1	..	1	3	1	3	3	2	..	1	..	17
Insanity	..	1	..	..	..	..	..	..	..	..	..	..	1
Epilepsy	..	..	..	..	1	1	1	..	..	..	..	..	3
Tetanus	..	..	..	..	..	..	1	1	..	..	..	..	2
Convulsions	3	5	1	3	4	1	1	3	..	3	..	6	30
Brain Diseases	2	1	..	..	3	1	1	..	1	..	2	1	12
Pericarditis	..	..	..	..	..	..	..	..	..	1	..	..	1
Aneurism	..	1	..	..	2	..	..	..	..	..	..	1	4
Heart Diseases	4	4	2	4	..	1	1	6	3	2	1	6	34
Rupture Varicose Vein	..	..	..	..	..	..	..	..	1	..	..	..	1
Laryngitis	..	..	..	..	..	..	..	..	..	..	1	..	1
Bronchitis	2	4	8	6	5	3	2	..	..	..	..	1	31
Pleurisy	..	..	..	..	..	1	..	1	..	..	..	..	2
Pneumonia	8	8	9	11	4	3	3	..	..	4	4	9	63
Asthma	1	2	..	..	1	1	..	..	..	..	..	..	5
Lung Diseases	..	1	4	..	..	..	..	..	2	1	..	1	9

Causes of Death in 1879 — Continued.

Disease.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Gastritis	..	..	1	..	..	..	..	..	..	..	..	..	1
Enteritis	..	..	..	..	1	..	1	..	..	..	..	..	2
Peritonitis	..	..	1	3	1	..	1	..	1	2	1	..	10
Ulceration of Intestines	1	..	..	..	..	..	..	..	..	..	..	..	1
Hernia	..	..	..	..	..	..	..	..	..	1	1	..	2
Ileus	1	..	..	..	..	..	..	..	..	..	..	1	2
Fistula	..	..	.	..	..	..	..	..	..	..	..	1	1
Stomach Disease	1	..	..	1	..	..	1	1	..	..	..	..	4
Jaundice	..	..	..	..	..	..	1	..	1	..	..	1	3
Liver Diseases	2	..	2	..	1	..	..	3	2	..	3	1	14
Spleen Disease	..	..	..	..	1	..	..	..	..	..	..	..	1
Nephritis	1	..	..	..	..	..	1	2	..	..	..	1	5
Bright's Disease	..	1	..	1	1	1	1	..	1	1	1	1	9
Diabetes	..	1	1	..	..	..	..	..	..	..	1	..	3
Cystitis	..	..	..	..	..	1	1	1	..	..	1	..	4
Kidney Diseases	..	..	..	1	..	..	..	..	..	..	1	2	4
Disease of Uterus	..	..	..	..	1	1	1	..	..	..	..	..	3
Phlegmon	..	..	..	..	..	..	..	1	..	..	..	..	1
Stillborn	11	2	7	5	2	2	2	5	1	5	6	7	55
Premature Birth and Infantile Debility	4	1	5	2	4	..	2	4	..	4	4	2	32
Cyanosis	..	1	1	..	..	..	..	..	..	..	..	..	2
Spina bifida	..	..	..	..	..	1	..	..	..	..	..	..	1
Other Malformations	..	..	..	..	..	..	..	2	..	..	..	1	3
Teething	..	..	1	..	..	.	1	1	..	..	1	..	4
Umbilical hæmorrhage	1	..	..	..	..	..	..	..	..	..	..	1	2
Childbirth	..	..	..	..	2	1	..	1	..	..	..	..	4
Old Age	3	4	..	3	4	..	..	2	..	3	4	..	23
Atrophy and Debility	3	2	1	2	..	2	..	3	..	1	3	..	17
Fractures and Contusions	2	2	..	1	1	..	2	..	..	..	2	..	10
Burns and Scalds	..	1	1	..	..	..	..	..	..	..	1	..	3
Drowning	..	..	..	..	..	..	1	..	..	..	..	..	1
Other Violence	..	..	1	..	..	..	..	..	..	1	1	..	3
Suicide	..	..	..	..	1	..	..	..	2	..	..	..	3
Judicial Hanging	..	..	1	..	..	..	..	..	..	..	..	..	1
Unknown	..	2	2	3	2	1	..	1	2	..	4	4	21
Totals	89	79	92	81	68	60	82	105	66	74	67	82	945

Cases of Scarlet Fever, Diphtheria, and Typhoid Fever reported to the Board of Health for the year 1879.

Name of Disease.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Scarlet Fever	42	33	24	15	17	1	3	4	7	11	6	4	167
Diphtheria	21	18	11	30	20	18	24	10	12	39	37	21	261
Typhoid Fever	1	..	2	1	1	..	7	7	9	9	4	9	50

REPORT

OF THE

CEMETERY COMMISSIONERS.

To the Honorable City Council of Cambridge:—

THE Commissioners of the Cambridge Cemetery, in submitting their Annual Report for the year ending Nov. 30, 1879, are reminded that a quarter of a century has passed since the grounds were purchased by the City Council, and set apart as a public burial-place.

By the records it appears that in August, 1853, by an order of the City Council, a tract of land on Coolidge Avenue, containing $24\frac{237}{1000}$ acres, was purchased at a cost of $10,603.68, and that on Nov. 1, 1854, under the direction of the City Government, it was consecrated and set apart as a "new city of the dead," and named "The Cambridge Cemetery."

In 1855, by an Act of the Legislature, a Board of Commissioners was established, to whom was entrusted the sole care, superintendence, and management of the Cemetery.

In September, 1865, by vote of the City Council, the grounds were enlarged by the purchase of an adjoining piece of land containing $11\frac{684}{1000}$ acres, for the sum of $10,922.33. In 1868 the stone lodge was erected at a cost of $5,100.

In 1873, by an order of the City Council, a new "soldiers' lot" was set apart, "to be devoted to the purposes of burial for all soldiers and sailors of the late war who may die within the limits of the city, and for whom no other provision shall be made." This lot contains 5,009 square feet of land, and thirty-four of our volunteer soldiers are now buried within its limits.

The whole number of interments in the Cemetery for the twenty-five years is 10,898. The total number of proprietors of lots is 1,674.

This reference to the beginning, enlargement, and a few of the improvements, seems not inappropriate as we complete the first quarter of a century since its dedication.

Receipts for the Year 1879.

Cash received for burial lots	$3,868.75	
„ „ care of lots	2,157.54	
„ „ burial fees	1,606.00	
„ „ foundations	276.08	
„ „ brick graves	149.00	
„ „ granite posts	451.00	
„ „ hay and wood	55.65	
„ „ myrtle	125.75	
„ „ top-dressing lots	108.50	
„ „ interest on the fund for the perpetual care of lots	99.00	
Total receipts		$8,897.27

Expenditures for the Year.

Superintendent's salary	$1,324.95	
Sundry workmen	5,736.32	
Loam, sods, manure, &c.	731.49	
Plants, water, lumber, &c.	639.53	
Marble tablets for soldiers' lot	124.25	
Sundry other expenses[1]	837.24	
Total expenditures		$9,393.78
Amount of appropriation	$9,500.00	
Expenditures for the year	9,393.78	
Balance unexpended	$106.22	

The number of interments for the year is 514, being thirty-six more than the previous year.

There have been received and paid into the City Treasury, for the perpetual care of lots, $300, making the total amount of this fund $1,950: the interest from the same, $99, has been expended upon the lots.

The number of lots prepared during the year	76
„ „ „ „ and now for sale	66
Estimated value of prepared lots	$15,137.60

[1] For details, see Auditor's Report.

The result of the year shows a reduction of the receipts $1,614.23, and a reduction of the expenses over the previous year of $900.

The amount required for the ensuing year is . .	$10,000.00
The receipts are estimated at	10,000.00

The grounds continue to be well cared for by the Superintendent, and are yearly becoming more attractive.

Respectfully submitted,

SAM'L L. MONTAGUE,
GEO. S. SAUNDERS,
WILLIAM PAGE,
JOHN M. TYLER,
GEORGE T. GALE,
GEORGE R. BRINE,

Commissioners of the Cambridge Cemetery.

Cambridge, Nov. 30, 1879.

REPORT

OF THE

OVERSEERS OF THE POOR.

THE Board of Overseers, appointed under the act of March 10, 1877, respectfully presents its Third Annual Report.

The system pursued during the past two years has been continued, with the same gratifying results.

The total cost of the care and maintenance of the poor for the year ending Nov. 30, 1879, was $25,356.19, which is a reduction, over the cost of last year, of $3,749.55. This reduction may, in a great measure, be due to the improvement in business, by giving employment to many who were before compelled to ask assistance, and to the treatment at the Almshouse of such of the insane poor as can be well cared for there.

346 histories of applicants for aid have been taken within the past year, embracing 1,045 persons, 389 of whom are settled in Cambridge, 203 in other cities and towns, and 453 are State paupers. This number, added to those already on file, constitutes a total of 1,814 histories, consisting of 5,554 persons.

The number of paupers supported by the city during the past year is as follows: —

Almshouse	232
State Workhouse	5
State Almshouse	5
State Industrial School	2
State Reform School	8
Middlesex House of Correction	6
State Lunatic Hospitals	44
Total	302

Included in the number supported at the Almshouse are 23 insane persons, — chronic cases of a harmless character, — of which number 17 have been transferred from State lunatic hospitals. These pauper patients were removed by the trustees of the hospitals upon application of the Overseers of the Poor, who, after careful investigation and medical examination in each case, were satisfied that they could be well cared for at the Almshouse. Such changes, at a moderate expense, were made in the building as were necessary for their proper accommodation.

Almshouse.

Total number of inmates during the year	232
Total number present Nov. 30, 1879	131
Average monthly number	131

The management and care of the Almshouse property is satisfactory. Some inexpensive repairs have been made on the building, and a few more may be required during the coming year.

The house, erected in 1851, was originally designed to accommodate the State paupers as well as our own poor, but the law of 1852, directing the removal of aliens to the State Almshouses, effected a great change, as 133 were accordingly, in May, 1854, transferred to the State institution at Tewksbury. A larger number than at present occupy the Almshouse could well be accommodated.

The grounds are under good cultivation, and the vegetable products have contributed largely toward the house supplies. The ornamental flower-gardens, in the season, give a pleasant and cheerful aspect to the premises. The ledge is profitably worked. The out-door labor is chiefly performed by the inmates.

Neatness, order, and comfort prevail within the house, under the faithful and able direction of the warden, William E. Hough, and the matron, his wife.

The favorable sanitary condition of the institution, under the careful and experienced service of the Almshouse physician, Dr. James R. Morse, will readily be observed.

The progress and discipline of the city school reflect much credit upon its energetic and capable teacher, Miss Harriet A. Butler.

The inmates have the benefit of the Rev. F. W. Holland's earnest interest in their spiritual welfare.

According to an appraisal made in November, 1879, by order of the Board, the personal property belonging to the Almshouse department is valued at $13,446.34. The inventory is appended to this report.

The tables, hereunto attached, show the amount expended and received in each department, as well as the actual cost to the city, which has been as follows: —

Expenditures for outside aid	$16,740.52
Receipts „ „ „	5,225.94
Total cost	$11,514.58
Expenditures for Almshouse	$14,881.53
Receipts „ „	575.11
Total cost	$14,306.42
Expenditures for farm and ledge	$1,226.90
Receipts „ „ „ „	1,691.71
Excess of receipts	$464.81
The aggregate expenditures for the above departments have been	$32,848.95
The aggregate receipts for the same have been	7,492.76
Total cost to the city for support and maintenance of the poor	$25,356.19

In addition to the above, the collection of house offal, which has been placed under the direction of the Overseers of the Poor, by an order passed by the City Council, March 5, 1862, but which in no way pertains to the maintenance of the poor, has resulted as follows: —

Expenditures	$5,700.47
Receipts from sales	4,411.20
Cost of collection above receipts	$1,289.27

Recapitulation.

The appropriation, with estimated revenue, made by the City Council for the Pauper Department, Almshouse, and Collection of House Offal, for the financial year commencing Dec. 1, 1878, was $45,000.

There have been expended	$38,549.42
The receipts have been	11,903.96
Leaving a total cost to the city	$26,645.46

In submitting their report, the Overseers respectfully present an estimate of the amount of appropriation which will probably be needed in their department for the next year: —

Expenditures.

Pauper department	$17,500.00
" " almshouse	18,500.00
" " house offal	6,000.00
	$42,000.00

Receipts.

Pauper department	$3,500.00
" " almshouse	1,800.00
" " house offal	3,500.00
	$8,800.00

SAM'L L. MONTAGUE,
J. C. WELLINGTON,
GEO. D. CHAMBERLAIN,
EZRA PARMENTER,
CHAS. E. VAUGHAN,
SUMNER ALBEE,
Overseers of the Poor.

Table of Expenditures.

BILLS APPROVED BY OVERSEERS OF POOR, DECEMBER, 1878, TO DECEMBER, 1879.

MONTHS.	Outside Aid.	Almshouse.	Farm and Ledge.	House Offal.	Total.
1878.					
December	$786.92	$964.67	$118.12	$528.78	$2,398.49
1879.					
January	3,210.92	1,441.80	94.31	361.15	5,108.18
February	633.99	1,109.36	102.87	386.89	2,233.11
March	1,042.78	947.68	105.25	422.20	2,517.91
April	2,814.58	1,902.41	125.71	412.31	5,255.01
May	711.98	576.97	95.25	512.00	1,896.20
June	520.99	780.38	96.43	668.35	2,066.15
July	2,588.73	1,617.13	154.60	482.19	4,842.65
August	516.42	617.81	111.46	387.40	1,633.09
September	1,347.96	1,020.54	76.25	528.83	2,973.58
October	1,968.59	1,973.15	74.00	354.00	4,369.74
November . . .	596.66	1,929.63	72.65	656.37	3,255.31
Total	$16,740.52	$14,881.53	$1,226.90	$5,700.47	$38,549.42

Table of Receipts,

FROM DECEMBER 1, 1878, TO DECEMBER 1, 1879.

MONTHLY ACCOUNTS.	Outside Aid.	Almshouse.	Farm and Ledge.	House Offal.	Total.
1878.					
December	$291.63	. . . .	. . . .	. . . .	$291.63
1879.					
January	402.34	$142.50	$302.37	$973.46	1,820.67
February	685.49	55.50	120.97	227.49	1,089.45
March	454.53	67.01	148.00	211.28	880.82
April	174.69	. . . .	94.08	656.24	925.01
May	383.00	91.39	84.10	162.05	720.54
June	513.24	6.50	54.85	141.43	716.02
July	397.23	8.34	325.04	668.05	1,398.66
August	1,265.68	10.60	54.34	143.86	1,474.48
September	275.81	22.51	260.51	206.20	765.03
October	139.10	11.43	71.77	840.79	1,063.09
November	243.20	159.33	175.68	180.35	758.56
Total	$5,225.94	$575.11	$1,691.71	$4,411.20	$11,903.96

Outside-Aid Department, December 1, 1878, to December 1, 1879.

Monthly Accounts.	Salaries, Books, and Stationery.	Postage and Printing.	Medical Attendance and Medicine.	Burials.	Fuel.	Groceries.	Boots and Shoes.	Transportation and Travel.	Outside support.	State Criminal Paupers.	State Insane Hospitals.	House of Correction.	Miscellaneous.	Total.
1878.														
December . .	$303.15	$38.50	$5.12	. . .	. . .	$222.12	. . .	$10.81	$107.92	. . .	$98.05	. . .	$1.25	$786.92
1879.														
January . . .	278.99	7.25	18.00	$112.00	$73.08	106 89	$58.30	12.56	250.71	$187.00	2,105.34	. . .	.80	3,210 92
February . . .	299.90	6.50	38.77	. . .	. . .	177.20	3.75	15.40	87.12	. . .	. . .	. . .	5.35	633.99
March	290.22	8.78	39 71	. . .	. . .	419.80	. . .	19.60	193 33	. . .	. . .	$67.54	3.80	1,042.78
April	244.17	107.10	14.50	. . .	. . .	205.78	. . .	15.31	100.82	209.00	1,912.18	4.57	1.15	2,814.58
May	229.02	3.00	12.00	. . .	. . .	107.82	257.95	53.44	35.00	. . .	. . .	. . .	13.75	711.98
June	238.28	5.00	4.95	. . .	. . .	126.50	. . .	14.60	92.46	. . .	38.20	. . .	1.00	520.99
July	269.11	39.10	. . .	82.00	738.23	101.50	. . .	27.25	403.85	84.50	832.94	. . .	10.25	2,588.73
August	230.05	4.87	3.90	. . .	. . .	114.50	. . .	18.40	143.00	. . .	. . .	. . .	1.70	516.42
September . . .	267.52	2.50	37 10	60.00	. . .	119.77	. . .	6.55	98.94	. . .	755.23	. . .	.35	1,347.96
October . . .	208.28	3.00	10.20	. . .	44.04	103.17	. . .	6.65	75.00	64.50	1,447.75	. . .	6.00	1,968.59
November . . .	240.17	2.00	8.10	. . .	. . .	199.06	. . .	15.75	119.33	. . .	. . .	. . .	12.25	596.66
Total . .	$3,097.86	$227.60	$192.35	$254.00	$855.35	$2,004.11	$320.00	$216.32	$1,708 48	$545.00	$7,189.69	$72.11	$57.65	$16,740.52

Outside-Aid Department.

Monthly Accounts.	Amount Expended.	Amount Received.	Receipts above Expenditures.	Expenditures above Receipts.
1878.				
December	$786.92	$291.63	. . . .	$495.29
1879.				
January	3,210.92	402.34	. . . .	2,808.58
February	633.99	685.49	$51.50	. . . .
March	1,042.78	454.53	. . . .	588.25
April	2,814.58	174.69	. . . .	2,639.89
May	711.98	383.00	. . . .	328.98
June	520.99	513.24	. . . .	7.75
July	2,588.73	397.23	. . . .	2,191.50
August	516.42	1,265.68	749.26	. . . .
September	1,347.96	275.81	. . . .	1,072 15
October	1,968.59	139.10	. . . .	1,829.49
November	596.66	243.20	. . . .	353.46
Total	$16,740.52	$5,225.94	$800.76	$12,315.34

Amount expended	$16,740.52
Amount received	5,225.94
Net cost	$11,514.58

Almshouse Department.

Monthly Accounts.	Groceries and Provisions.	Dry Goods.	Clothing.	Fuel.	Gas.	Water.	Hardware, Tools, &c.	Horse-shoeing and Carriage-work.	Medicines.	Salaries and Wages.	Repairs.	Stationery.	Lumber, &c.	Household Wares.	Ice.	Pigs and Cows.	Miscellaneous.	Total.
1878.																		
Dec. . .	$571.29	. . .	$41.50	$2.10	. . .	. . .	$19.57	. . .	$1.80	$174.00	$74.91	$6.40	. . .	$10.40	$35.40	. . .	$27.30	$964.67
1879.																		
Jan. . .	281.05	$79.78	24.67	636.21	$157.76	. . .	1.00	. . .	. . .	168.00	. . .	2.50	. . .	83.08	. .	. . .	7.75	1,441.80
Feb. . .	286.83	112.56	172.90	1.50	. . .	$83 20	.86	. . .	11.40	318.00	6 39	. .	$39.72	. . .	50.00	. . .	26.00	1,109.36
March.	512.43	83.63	. . .	. . .	. . .	. . .	22.77	$0.50	3.25	168.00	. . .	.75	. . .	7.95	. .	$140.00	8.40	947.68
April. .	602.06	94.91	. . .	485.40	127.89	85.42	.75	. . .	45.91	344.00	41.03	1.00	27.01	8.00	. .	18.20	20.83	1,902.41
May . .	139.54	91.86	90.80	. . .	. . .	. . .	.10	. . .	.70	138.00	94.30	5.00	3.75	3 54	. .	. . .	9.38	576.97
June. .	443.34	3.00	14.20	. . .	. . .	. . .	. . .	48.05	5 35	182.00	19.29	12.76	3.00	6.85	. .	. . .	42.54	780.38
July . .	835.01	12.00	. . .	. . .	. . .	116.52	58.71	. . .	10.80	411.00	32 00	. .	74.76	30 88	. .	. . .	35.45	1,617.13
Aug. . .	156.36	53.74	. . .	. . .	. . .	. . .	3.56	56.13	52.95	254.00	. . .	. .	18.07	5.25	. .	15.00	2.75	617.81
Sept. .	384.38	72.19	10.68	. . .	. . .	. . .	23 49	.50	. . .	404.00	79.37	. .	8.64	28.39	. .	. . .	8.90	1,020.54
Oct. . .	1,038.32	13.47	. . .	539.52	77.12	. . .	. . .	25.55	. . .	154.00	37.00	10.33	64.09	. . .	. .	. . .	13.75	1,973.15
Nov. .	1,277.78	2.07	369.13	. . .	. . .	. . .	. . .	. . .	5.60	154.00	20.65	. .	. . .	.40	. .	. . .	100.00	1,929.63
Total .	$6,528.39	$619.21	$723.88	$1,664.73	$362.77	$285.14	$130.81	$130.73	$137.76	$2,869.00	$404.94	$38.74	$239.04	$184.74	$85.40	$173 20	$303.05	$14,881.53

City Almshouse Department.

Monthly Accounts.	Number of Paupers.	Total Expenditures.	Total Receipts.	Expenditures above Receipts.
1878.				
December	119	$964.67	....	$964.67
1879.				
January	138	1,441.80	$142.50	1,299.30
February	135	1,109.36	55.50	1,053.86
March	138	947.68	67.01	880.67
April	134	1,902.41	....	1,902.41
May	132	576.97	91.39	485.58
June	123	780.38	6.50	773.88
July	128	1,617.13	8.34	1,608.79
August	132	617.81	10.60	607.21
September	136	1,020.54	22.51	998.03
October	131	1,973.15	11.43	1,961.72
November	134	1,929.63	159.33	1,770.30
Total	....	$14,881.53	$575.11	$14,306.42

Amount expended	$14,881.53
Amount received	575.11
Net cost	$14,306.42
Average number of paupers	131

Farm and Ledge Department.

Monthly Accounts.	Powder.	Wages on Ledge.	Wages on Farm.	Miscellaneous.	Total.
1878.					
December	$7.50	$80.62	$30.00	. . . .	$118.12
1879.					
January	. . .	64.31	30.00	. . . .	94.31
February	7.50	65.37	30.00	. . . .	102.87
March	7.50	67.75	30.00	. . . .	105.25
April	15.90	79.81	30.00	. . . .	125.71
May	. . .	65.25	30.00	. . . .	95.25
June	. . .	66.43	30.00	. . . .	96.43
July	8.40	91.00	30.00	$25.20	154.60
August	8.40	73.06	30.00	. . . .	111.46
September	. . .	37.37	30.00	8.88	76.25
October	3.75	30.00	30.00	10.25	74.00
November	12.65	30.00	30.00	. . . .	72.65
Total	$71.60	$750.97	$360.00	$44.33	$1,226.90

Farm and Ledge Department.

Monthly Accounts.	Amount Expended.	Amount Received.	Receipts above Expenditures.	Expenditures above Receipts.
1878.				
December	$118.12	. . . .	. . . .	$118.12
1879.				
January	94.31	$302.37	$208.06	. . . .
February	102.87	120.97	18.10	. . . .
March	105.25	148.00	42.75	. . . .
April	125.71	94.08	. . . .	31.63
May	95.25	84.10	. . . .	11.15
June	96.43	54.85	. . . .	41.58
July	154.60	325.04	170.44	. . . .
August	111.46	54.34	. . . .	57.12
September	76.25	260.51	184.26	. . . .
October	74.00	71.77	. . . .	2.23
November	72.65	175.68	103.03	. . . .
Total	$1,226.90	$1,691.71	$726.64	$261.83

Amount expended	$1,226.90
Amount received	1,691.71
Excess of receipts	$464.81

House Offal Department.

Monthly Accounts.	Wages.	Veterinary Services.	Grain and Straw.	Blacksmith.	Repairs.	Hardware and Swill-Buckets.	Horse.	Total.
1878.								
December	$355.00	$4.00	$25.81	$78.32	$48.75	$16.90	. . .	$528.78
1879.								
January	355.00	. . .	6.15	. . .	. . .	. . .	. . .	361.15
February	355.00	. . .	31.89	. . .	. . .	. . .	. . .	386.89
March	355.00	. . .	22.29	36.15	. . .	8.76	. . .	422.20
April	350.00	. . .	35.56	26.75	. . .	. . .	. . .	412.31
May	360.00	. . .	152.00	. . .	. . .	. . .	. . .	512.00
June	355.00	. . .	. . .	. . .	38.35	. . .	$275.00	668.35
July	355.00	. . .	88.15	12.51	. . .	26.53	. . .	482.19
August	325.00	. . .	62.40	. . .	. . .	. . .	. . .	387.40
September	392.00	. . .	118.09	15.38	. . .	3.36	. . .	528.83
October	354.00	. . .	. . .	. . .	. . .	. . .	. . .	354.00
November	355.00	. . .	301.37	. . .	. . .	. . .	. . .	656.37
Total	$4,266.00	$4.00	$843.71	$169.11	$87.10	$55.55	$275.00	$5,700.47

House Offal Department.

Monthly Accounts.	Amount Expended.	Amount Received.	Receipts above Expenditures.	Expenditures above Receipts.
1878.				
December	$528.78	....	....	$528.78
1879.				
January	361.15	$ 973.46	$612.31	....
February	386.89	227.49	....	159.40
March	422.20	211.28	....	210.92
April	412.31	656.24	243.93	....
May	512.00	162.05	....	349.95
June	668.35	141.43	....	526.92
July	482.19	668.05	185.86	....
August	387.40	143.86	....	243.54
September	528 83	206.20	....	322.63
October	354.00	840.79	486.79	....
November	656.37	180.35	....	476.02
Total	$5,700.47	$4,411.20	$1,528.89	$2,818.16

Amount expended	$5,700.47
Amount received	4,411.20
Net cost	$1,289.27

REPORT

OF

THE WARDEN OF THE ALMSHOUSE.

CAMBRIDGE, Dec. 1, 1879.

To the Board of Overseers of the Poor: —

GENTLEMEN, — The Annual Report of the Institution for the year ending Nov. 30, 1879, is herewith most respectfully submitted: —

The whole number admitted during the year ending Nov. 30, 1879, was		134
On Overseers' permit	102	
On Court sentence	32	
The whole number discharged during the year — males 57, females 58		115

Classification of Court cases as follows: —

Truancy	7	
Drunkenness	22	
Stubborn children	2	
Railer and brawler	1	
Total		32

Total number of inmates present Nov. 30, 1879: —

Males	76	
Females	55	
Total		131

Of these there are, —

Adults	87	
Minors	44	

Total number of children attending school Nov. 30, 1879 : —

Boys	29	
Girls	3	
Total		32
On Overseers' permit	17	
On Court sentence	15	

Total number of inmates present Nov. 30, 1878 : —

Males	63	
Females	47	
Total		110

Of these there were, —

Adults	74	
Minors	36	

Total number of children attending school Nov. 30, 1878 : —

Boys	28	
Girls	6	
Total		34
On Overseers' permit	21	
On Court sentence	13	

The following statement shows the products of the farm, with the estimated value of the same : —

850 bushels potatoes	$637.50
120 bushels rye	90.00
100 bushels onions	100.00
120 bushels tomatos	50.00
60 bushels corn	24.00
75 bushels beans	37.50
50 bushels peas	20.00
30 bushels turnips	15.00
Amount carried forward	$974.00

Amount brought forward		$974.00
1,600	bunches asparagus	192.00
8,000	heads cabbages	320.00
300	lbs. squashes	6.00
25	tons English hay	500.00
20	tons straw	400.00
1	ton carrots	30.00
1	ton parsnips	30.00
4	tons mangel-wurzels	40.00
200	boxes strawberries	20.00
20	bbls. apples	40.00
10	bbls. pears	10.00
		$2,562.00

School.

The average number of scholars in attendance at school for the year ending November 30 is 38. Miss Hattie Butler still continues in charge, and evinces that rare interest in her duties which should redound to her credit, and cause the children, when they arrive at the age of discretion, to thank the city for furnishing so kind, energetic, and indefatigable a lady to teach them the rudiments of an education.

Sabbath Services.

The regular Sunday services are continued as heretofore, with the Rev. F. W. Holland as chaplain, commencing at 1.30 P.M., and closing at 2.30 P.M. Singing is rendered by the school children, accompanied by the organ.

Hospital Department.

The general health of the institution is excellent, but we have the usual number of chronic cases among the aged inmates, which require the services of the physician daily. There has been no prevailing epidemic or contagious disease worthy of note during the year, as can be seen by the list of deaths, the youngest person having died at the age of 24 years.

The following are the names and ages of those who have died during the past year: —

Isabella Murray, aged 100 years.
Nancy Sanderson, aged 95 years.
Catherine Marshall, aged 73 years.
Lydia Phipps, aged 70 years.
John Payne, aged 72 years.
Patrick Donahoe, aged 55 years.
Ellen Prendible, aged 45 years.
Catherine Murphy, aged 37 years.
Odilla le Plant, aged 24 years.

Males	2
Females	7
Adults	9
Minors	0
Total	9

Industrial.

The farm has been managed in the same manner as last year, with the same general results. The labor is all performed by the inmates, with the exception of one man who is hired to superintend the work. The ledge is worked continually, one man only being hired as a foreman, and the rest of the work being done by the inmates. We are ready to furnish all the foundation stone which is called for at short notice, there generally being a surplus of about one hundred perches on hand. The area of the ledge is ample to accommodate with work all able-bodied men who call upon the City for support.

The offal department still continues to be under my supervision. There were put on early in the spring four new wagons, built by the inmates during the winter, which appear to give general satisfaction. There have not been the complaints which were formerly of daily occurrence on account of the nuisance, during the heated term, caused by the leakage of the old wagons.

There are five wagons in use, making two trips per day each, and during the months of June, July, August, and September, extra wagons are put on when necessary.

Sanitary.

The sanitary condition of the institution appears to be remarkably good. The good health of the inmates, doubtless, can be attributed to their well-ventilated rooms, plain, wholesome food, regular hours of sleep and meals, and plenty of exercise in the open air.

Discipline.

The discipline of the institution is simply what is necessary for the welfare of the inmates and the public. Corporal punishment is entirely abolished, and the methods now used to curb the refractory are to deprive them of one or two meals per day, and, in case that is not sufficient, they are confined in a solitary cell with a diet of bread and water; but I am happy to say that the latter method is unnecessary, except in a few cases.

Insane.

Total number of insane inmates present during the year, 23.
Total number of insane present Nov. 30, 1879, 16.

Males	7
Females	9

(Included in the total number of inmates.)

I have, by your directions, utilized the upper floor of the female wing, as also that of the men's, and subdivided them into twelve strong rooms, thereby providing for them comfortable and quiet quarters, and separating them from the immediate presence of the ordinary inmates, taking precaution so to arrange matters that they can be confined in said rooms when necessary.

Very respectfully,

WM. E. HOUGH, *Warden.*

Schedule of Almshouse Property, Nov. 30, 1879.

Warden's Family Department.

30 lbs. lard	$3.00
1 chest tea, 40 lbs. at .50	20.00
1 bbl. gran. sugar	18.00
60 lbs. butter	24.00
20 cans tomatos	5.00
½ bbl. crackers	2.00
20 lbs. starch	2.00
2 peck baskets	.50
1 refrigerator	5.00
1 wringing-machine	5.00
3 washtubs	3.00
12 washboards	3.00
1 churn	10.00
200 lbs. rye coffee	10.00
50 lbs. tobacco	15.00
10 galls. pickles	2.00
2 cake cans	.50
20 cans pears	5.00
1 Bristol brick	.10
1 ball twine	.20
1 potato-masher	.50
100 ft. wire clothes-line	5.00
2 ice-cream freezers	2.00
12 lbs. cream tartar	3.00
4 lbs. allspice	.50
4 milk-cans	1.00
5 milk-pans	1.50
1 colander	.50
3 saucepans	1.00
2 large tin pails	1.00
4 tin cans	4.00
4 lbs. mustard	.40
1 lb. ginger	.20
3 porcelain iron kettles	1.50
1 bean-pot	.20
1 pudding-pot	.20
2 chopping-trays	.50
1 tin milk-pail	.75
2 cedar milk-pails	2.00
4 bread-pans	2.00
4 baking-pans	1.00
2 Washington-pie plates	.20
1 bbl. flour	10.00
2 wooden pails	.50
1 tin mixing-pan	$.50
2 clothes-horses	1.00
2 rolling-pins	.25
3 doz. tumblers with jelly	3.60
1 lb. extract lemon	1.00
1 lb. extract vanilla	1.00
2 papers gelatine	.75
7 spice-boxes and contents	1.00
2 egg-beaters	.50
2 doz. cake-tins	1.00
1 steamer and sieve	1.75
1 black-walnut extension table	12.00
12 hard-wood dining chairs	24.00
1 tea chair	2.00
1 mahogany secretary	10.00
1 clock	15.00
1 3-ply carpet	30.00
1 picture	5.00
1 looking-glass	2.00
1 crumb-cloth	6.00
1 sofa	12.00
1 carpet	10.00
1 black-walnut key closet with keys and brackets	2.00
1 picture (landscape)	5.00
24 pairs sheets	24.00
24 pillow-cases	2.80
6 doz. chamber towels	12.00
6 comforters	15.00
9 double blankets, at 3.50	31.50
8 white spreads, at 3.50	28.00
9 table-cloths, at 4.00	36.00
5 doz. white doilies, at 1.20	6.00
2 colored table-spreads, at 3.00	6.00
1 doz. crash rollers, at .12	1.44
1 doz. dish towels, at .12½	1.50
4 doz. napkins, at 3.00	12.00
3 glass dishes, at .25	.75
3 vegetable-dishes, at 1.00	3.00
2 butter-dishes, at .75	1.50
2 pickle-dishes, at .75	1.50
4 baker's dishes, at .30	1.20
2 breakfast platters, at .75	1.50
2 pitchers, at .50	1.00
2 gravy-dishes, at .25	.50

3 doz. dinner plates, at 1.25	$3.75
3 doz. breakfast plates, at 1.00	3.00
3 doz. tea plates, at 1.00	3.00
2 doz. pie-plates, at 1.00	2.00
2 doz. sauce-dishes, at .75	1.50
2 doz. cups and saucers, at 1.50	3.00
2 sugar-bowls, at .50	1.00
2 cream-pitchers, at .20	.40
3 doz. individual butters	1.12
2 doz. custard-cups, at .75	1.50
2 doz. ice-cream glasses	2.00
2 doz. goblets, at 1.50	3.00
1½ doz. egg-glasses, at 1.00	1.50
2 doz. plated forks, at 4.00	8.00
20 plated teaspoons	2.00
2 plated cake-baskets	12.00
1 doz. individual salts	.50
4 blanc-mange moulds	1.00
2 syrup-pitchers	.50
2 sugar-bowls	1.50
2 doz. cups and saucers	3.50
4 pint pitchers	1.00
1 doz. tumblers	1.50
½ doz. coffee-saucers	1.00
1 doz. sauce-plates	1.25
1 doz. pint bowls	.75
1 plated soup-ladle	3.00
2 plated castors	10.00
2 silver mustard-spoons	2.50
2 plated butter-knives	1.00
20 plated tea-spoons	2.00
1 doz. table-spoons	4.00
2 doz. forks	4.00
3 doz. table knives	6.00
3 carving knives and forks	3.00
2 tea-trays	.50
11 wire table-screens	1.10
1 soup-tureen and ladle	6.00
1 gravy-tureen	1.25
1 doz. soup-plates	1.50
2 covered dishes	2.50
4 nappies	2.00
1 pudding-dish	.87
2 celery-glasses	1 00
2 dinner platters	2.50
2 breakfast platters	1.50
4 3-qt. pitchers	1.50
2 2-qt. pitchers	1.00
1 covered butter-dish	.60
1 dinner bell	.75
1 table bell	1.00
1 spoon-holder	.25
1 Walker's range and furniture	$10.00
1 mahogany table	3.00
1 pine table	1.00
1 refrigerator	2.00
2 wood arm-chairs	2.00
8 doz. fruit jars, at .70	5.60
2 pepper boxes	.16
1 doz. common plates	.75
2 mixing bowls	1.80
3 dinner platters	3.00
1 breakfast platter	.75
4 covered dishes	.50
2 2-qt. pitchers	1.00
1 3 qt. pitcher	.60
1 4-qt. pitcher	.75
2 britannia tea-pots	1.00
1 tin tea-pot (large)	1.75
1 tin coffee-pot (large)	1.00
3 gem pans	1.00
4 nappies	1.75
1 pudding-dish	.40
1 knife-box	.50
3 milk-cans	3.00
½ gross matches	1.12
5 stove-brushes	1.00
5 qt. stone bowls	.50
½ doz. mixing-spoons	.50
½ doz. cooking knives and forks	1.00
1 ice-pick	.25

Room No. 1.

1 3-ply carpet	15.00
1 pine painted chamber set	25.00
1 excelsior mattress	4.00
1 feather bed	10.00
1 hair mattress	20.00
2 feather pillows	7.00
1 Tucker spring bed	5.00
1 washbowl, pitcher, and chamber	3.00
1 soap-bowl	.20

Room No. 2.

1 pine painted chamber set	30.00
1 husk mattress	7.00
1 Tucker spring bed	5.00
2 feather pillows	6.00
1 toilet set	3.00
1 2-ply carpet	15.00
1 feather bed	20.00

Room No. 3.

1 black-walnut chamber set	$50.00
1 spiral spring bed	10.00
1 hair mattress	20.00
2 feather pillows	6.00
1 soap-dish and chamber	3.00
1 cabinet, hot and cold water	10.00
1 2-ply carpet	15.00

Room No. 4.

1 pine chamber set	17.00
1 feather bed	10.00
1 husk mattress	4.00
2 feather pillows	4.00
1 toilet set	1.50
1 3-ply carpet	10.00
1 curtain and fixtures	.50

Room No. 5.

1 chestnut chamber set	30.00
1 husk mattress	5.00
1 hair mattress	25.00
2 feather pillows	4.00
1 toilet set	2.75
1 2-ply carpet	20.00
2 curtains and fixtures	2.00
1 Tucker spring bed	5.00

Room No. 6.

1 cottage bedstead	3.00
1 husk mattress	4.00
1 feather bed	10.00
2 pillows	2.00
1 bureau	2.50
1 sink	1.50
1 towel stand	1.50
1 toilet table	1.00
1 pine wardrobe	5.00
2 cane-seat chairs	2.00
1 cane-seat rocker	2.00
1 carpet	10.00
1 toilet set	3.00

Room No. 7.

1 cottage bedstead	10.00
1 husk mattress	4.00
1 feather bed	5.00
2 feather pillows	2.00
1 sink	2.00
1 bureau	2.50
3 cane-seat chairs	3.00
1 carpet	$6.00
1 toilet set	3.00

Room No. 8.

1 pine chamber set	20.00
1 straw bed	1.00
1 feather bed	10.00
2 feather pillows	2.00
1 Tucker spring bed	5.00
1 wardrobe	5.00
1 2-ply carpet	5.00
2 white curtains and fixtures	2.00
1 toilet set	2.00

Room No. 9. — *Seamstress.*

1 painted chamber set	20.00
1 straw bed	1.00
1 feather bed	8.00
1 cotton pillow	.50
1 feather pillow	1.00
1 mahogany bureau	3.00
1 Tucker spring bed	5.00
1 black walnut cabinet	5.00
1 toilet table	1.00
3 window curtains and fixtures	3.00
1 2-ply carpet	20.00
1 clock	2.00
1 toilet set	2.00

Parlor.

8 hair-bottom chairs	16 00
2 hair-cloth sofas	50.00
2 centre tables	10.00
1 3-ply carpet	40.00
1 cuspidor	1.00
1 easy chair	15.00
2 chandeliers	30.00

Office.

8 black-walnut chairs	60.00
1 table and desks	20.00
4 ink-stands	2.00
⅛ gross steel pens	.50
1 map City of Cambridge	5.00
1 clock	10.00
3 pictures (past wardens)	6.00
1 cuspidor	1.00
1 waste basket	.20
1 Brussels carpet	50.00
1 smoker's set	1.00
1 lamp-lighter	.50
1 looking-glass	10.00

1 hair-brush and comb	$1.00
1 clothes brush	1.00
2 steam gauges	20.00
1 gas chandelier	20.00
2 foot-mats	4.00
1 ice-water tank	3.00
stationery and books	25.00
1 bronze match-safe	1.00

PAUPER DEPARTMENT.

2 Singer's sewing-machines	80.00
1 cutting-board & case drawers	25.00
½ doz. pair shears	2.50
1 toilet table	1.00
1 chestnut table	15.00
1 looking-glass	2.00
3 arm-chairs	3.00
3 sewing-chairs	3.00
8 wooden chairs	1.50
1 cane-bottom chair	1.00
1 flower-stand	3.00
lot of pots and plants	10.00
1 clock	3.00
1 settee	3.00
1 clothes-box	2.00
2 fire-extinguishers	10.00
1 portable closet	2.00
dispensary, medicines, and instruments	100.00
200 iron bedsteads, at 3.00	600.00
2 wooden bedsteads, at 5.00	10.00
130 straw beds, at 1.00	130.00
12 feather beds, at 10.00	120.00
417 sheets, at .50	208.00
500 blankets, at 1.00	500.00
30 straw pillows, at .25	7.50
200 cotton pillows, at .30	60.00
12 feather pillows, at 1.00	12.00
266 pillow cases, at .12	31.92
168 white spreads, at 1.10	184.80
112 check spreads, at 1.00	112.00
3 children's cribs, at 3.00	9.00
150 chambers, at .25	37.50
1 doz. chairs, at 1.00	12.00
6 large rockers, at 3.00	18.00
24 comforters, at 1.00	24.00
4 bureaus, at 3 00	12.00
5 dry sinks, at 1.50	7.50
24 water-pails, at .50	12.00
12 tubs, at 1.00	12.00
1 wringing-machine	10.00
16 doz. knives and forks	$3.20
12 doz. iron spoons	7.20
12 wash-basins	2.00
17 black-walnut dining tables	85.00
12 pine tables	24.00
1 parlor-croquet table	3.00
12 cane-seat arm chairs	18.00
48 brooms, at .30	14.40
24 mops, at .25	6.00
200 camp-stools, at .20	40.00
250 plates, at .06	15.00
100 tin dippers, at .06	6.00
3 tea-cans, at 2.00	6.00
3 dish-trays, at 1.00	3.00
3 dinner bells, at 1.00	3.00
3 knife-trays, at .25	.75
24 dish towels, at .10	2.40
48 pepper-boxes, at .05	2.40
50 wood salt-boxes, at .05	2.50
70 1-qt. bowls, at .12	8.40
4 wood benches, at 1.00	4.00
4 children's high chairs	4.00
10 settees, at 1.50	15.00
36 crash towels, at .12	4.32
6 stoves	30.00
1 range and furniture	50.00
1 copper boiler	5.00
6 clothes-horses, at .50	3.00
24 flat irons	12.00
2 clothes-barrels, at .75	1.50
4 lanterns, at .50	2.00
2 shovels, at 1.00	2.00
6 kerosene-lamps	1.20
4 oil-cans, at .20	.80
6 clothes-baskets	3.00
7020 lbs. soap, at .05⅛	359.78
4 knit jackets	4.00
10 pairs men's buck mits	5.00
21 men's caps, at .38	7.98
10 men's reefers	37.50
24 vests	36.00
9 coats	32.00
20 pairs pants	40.00
28 pairs boys' overalls	8.40
40 pairs men's overalls	20.00
26 boys' Sunday suits	104.00
52 boys' common suits	52.00
12 looking-glasses	6.00
7 bathing tubs	70.00
26 boys' hats	13.00
64 boys' shirts	32.00
116 men's shirts, at .70	81.20

36 men's undershirts	$13.50
24 pairs men's drawers	9.00
40 pairs men's drawers (old)	10.00
64 pairs boys' socks	16.00
90 pairs men's socks	27.00
50 men's jumpers	12.50
12 bean-pots	3.00
75 flower-pots	7.50
8 baking pans	8.00
36 brown-bread tins	5.40
1 pine bench (baker's)	2.00
1 mixing trough (baker's)	5.00
2 sieves (baker's)	2.00
132 women's dresses	198.00
100 women's chemises	37.00
144 pairs women's stockings	13.08
18 pairs children's stockings	1.80
75 women's flannel underskirts	60.00
50 women's cotton underskirts	15.00
25 girls' dresses	18.75
12 girls' underskirts	3.24
24 pairs girls' drawers and chemise	4.80
25 pairs men's brogans	31.25
57 „ women's shoes	57.00
108 „ girls' boots	108.00
109 „ boys' brogans	114.45
50 „ infants' shoes	12.50
284 yards cotton print, at .08	22.72
161 „ gingham, at .10	16.10
140 „ silesia, at .09	12.60
90 „ crash, at .08	7.20
151 „ drilling, at .12	18.12
128 „ ticking, at .12	15.36
32 „ cambrie, at .05	1.60
25 „ wool flannel, at .22	5.50
37 „ hickory shirting	4.44
35 „ cassimere, at .45	15.75
30 „ boys' cloth, at .22	7.20
117 „ cotton sheeting, at .08	9.36
8 lbs. woollen yarn, at 1.20	9.60
1 box cotton yarn	2.00

Property outside of House.

Scale-house.

1 set Fairbanks's scales	200.00
1 set books	10.00
1 coal-hod, broom, and shovel	.50
2 chairs	2.00
1 desk	3.00

Ledge.

300 perches stone, at .75	$225.00
2 kegs powder, 500 ft. fuze	7.50
4 striking-hammers	8.00
3 breaking-hammers	6.00
6 iron bars	6.00
lot of drills	10.00
1 tool box	2.00

Miscellaneous.

70 hot-bed sashes	21.00
7 „ shutters	3.00
2 hogs	40.00
5 empty hogsheads	2.50
2 M. old brick	8.00
½ M. new brick	5.00
70 bushels mangel-wurzels	21.00
30 „ beets	15.00

Tools.

2 cultivators	10.00
1 side hill plough	5.00
1 large sod plough	8.00
1 small sod plough	5.00
2 hay wagons	75.00
300 bean poles	3.00
2 seed-sowers	10.00
3 post-hole diggers	3.00
4 plow points	2.00
5 tip-carts	200.00
6 offal-pungs	120.00
1 small manure-wagon	25.00
1 market-wagon	50.00
1 stone-wagon	200.00
1 harrow	10.00
1 stone-drag	1.00
1 cess-pool wagon	20.00
60 hot-bed mats	30.00
4 offal-wagons (new)	600.00
2 offal-wagons (old)	100.00
1 snow-plow	4.00
16 shovels, 12.00; 8 scrapers, 2.00,	14.00
50 feet old hose	.50
1 winnowing machine	25.00
32 bushels rye, at .75	24.00
4 cow-halters	4.00
1 grain-chest	10.00
6 iron rakes	3.00
4 cows	160.00
1 open buggy	30.00
1 top Goddard buggy	100.00
1 carryall	100.00

1 single sleigh	$25.00
1 double sleigh (old)	10.00
2 single harnesses	40.00
1 wagon-cover	1.00
1 whip, 1.00; 3 jacks, 5.00	6.00
2 monkey-wrenches	6.00
5 oil-cans	.50
1 supply-horse	200.00
1 carriage-horse	100.00
6 offal-horses	900.00
2 farm-horses	100.00
1 set double harnesses	50.00
6 offal-harnesses	180.00
1 market-harness	25.00
2 sets plow-chains	10.00
5 extra horse-collars (old)	5.00
5 curry-combs and brushes	1.00
1 card	.10
10 horse-blankets	15.00
5 manure-forks	5.00
6 wagon-wrenches	3.00
6 boxes grease	.60
2 hay-cutters	20.00
25 tons hay	500.00
15 tons straw	300.00
30 bbls. onions	30.00
10 bush. meal	8.00
2 do. bran	4.00
2 1-bush. baskets	1.00
1 rubber coat	2.00
11 halters	5.00
1 syringe	5.00
1 spring punch	.75
1 bar harness soap	1.00
10 lbs. nails	.50
1 pair steps	1.00
500 lbs. old iron	2.50
½ bbl. disinfectant	2.00
1 riding saddle	3.00
2 street blankets	5.00
1 horse-weight	1.00
10 surcingles	2.00
1 double sled	30.00
1 overseer's pung, covered	50.00
1 water-trough	1.00
1 75-ft. ladder	5.00
5 small ladders	5.00
3 boys' sleds	3.00
1 beet cutter	1.00
1 hand-cart	10.00
ice hooks, tongs, and runs	5.00
32 hens	12.00

Store Room.

2 skids	$5.00
84 bbls. T. flour, at 7.00	588.00
4 bbls. P.P. flour	28.00
10 bbls. Lone Star flour	50.00
1900 lbs. fish	38.00
3 bbls. beans	13.50
10 lbs. oatmeal	.50
50 lbs. rice	4.00
75 lbs. rye meal	3.00
9 bushels salt	4.00
1 bbl. table salt	2.00
100 lbs. corn meal	1.00
1 bbl. vinegar	4.00
1 set platform scales	20.00
1 set counter scales	5.00
lot paper bags	2.00
1 buffalo robe	5.00
1 horse cover	5.00
1 bbl. kerosene oil	6.00
7 bbls. apples and pears	7.00
35 pails (house made)	8.75
5 wheelbarrows	15.00
1 grindstone	5.00
lot of carpenter's tools and chest	25.00
2 anvils	10.00
lot blacksmith's tools	25.00
800 bushels potatoes, at .80	640.00
12 bushels carrots	6.00
11 bbls. turnips	11.00
25 bbls. parsnips	50.00
5 bbls. squash	5.00
1 cobbler bench and tools	5.00
100 ft. hose and carriage	10.00
1 walk roller (iron)	10.00
1 coal-screen	2.00
lot lumber	20.00
1 violin	5.00
paints and brushes	10.00
14 cords wood	56.00
10 hoes	5.00
3 scythes	3.00
6 scythe-snaths	6.00
4 wooden snow-shovels	2.00
1 grain-cradle	5.00
125 tons coal	437.50
5 window-sashes with glass	5.00
150 empty flour bbls.	15.00
1 ox-yoke	2.00
1000 lbs. window-weights	20.00
1 wood-saw and axe	2.00
	$13,446.34

REPORT

OF

THE ALMSHOUSE PHYSICIAN.

To the Overseers of the Poor of the City of Cambridge: —

GENTLEMEN, — At the close of another year of professional service in the care of the sick and infirm inmates of the Cambridge Almshouse, it becomes my duty to make to your honorable board a report of the services which I have rendered, and the results of the same.

At the commencement of the year there were seven that were sick in the hospital; and seven others were most of the time under my care in the hospital portion of the institution, nearly all of whom were suffering from some form of chronic disease; many of those thus afflicted had been under medical treatment for many years, — in fact their earthly heritage seems to be one of pain and suffering, — while others have their frequent attacks of sickness from which they partially recover, but are liable to return again to their bed of pain, it being the natural result of a broken constitution and impaired vitality, the result of transgression of the laws of health and of life.

I am happy to report that, in all the cases of acute form of disease during the year, none has proved fatal; in fact, no fatal case of acute disease has occurred at the institution during the past four or five years. The healthy locality of the Almshouse and the plain, uniform diet of the inmates will account in a great degree for such favorable results.

The year may be regarded as favorable in regard to the amount of sickness, there having been a less number of severe acute cases than in former years. Nearly all that I have cared for in

the hospital were those that suffer from chronic disease, while those who suffer from temporary sickness were prescribed for in their rooms or at the office.

The whole number that have received treatment in the hospital rooms during the year is 56; of that number there were, males, 22, females, 34. The whole number of inmates out of the hospital rooms requiring treatment was 32, divided as follows: men's department, 10; the boys' department, 6; in the women's department, 16. The number now sick in the hospital rooms is 8; the number that seem improved, 6; the number that have died during the year, 9; the number that have been discharged as cured or improved, among the whole number under treatment in the institution during the year, 65, — making the whole number that have received treatment during the past year, 88. The nationality of those who have received treatment in the hospital rooms is as follows: Born in Ireland, 44; born in United States (1 colored), 10; born in England, 1; born in Canada (French), 1. The frequent attacks of temporary sickness with those out of the hospital rooms have occurred under circumstances which rendered it very difficult for me to keep a record of their nationality, but they were almost uniformly of foreign birth or parentage. The fatal cases which have occurred during the year have been from causes as follows: from old age, 3; from hæmorrhage of the lungs, 2; from consumption, 1; from cancer, 1; from paralysis, 1; from chronic peritonitis, 1. Of those who died from old age, one had reached the age of 100 years, one 95 years, and one 73 years.

Some of those who died from disease had been sick many months, some even for years, so that death seemed to be a kind release from constant suffering; and there are those who still linger upon the confines of life, who often express the earnest wish that they may depart and be at rest. In the month of July last three children were received into the hospital for contagious and infectious diseases, who were sick with diphtheria, and were sent from the Avon-place home for orphans, to prevent the spread of the disease among its inmates; one case was well marked and severe, but they all made a good and perfect recovery.

Three cases of confinement have occurred at the house during the year, all of whom made a good recovery. Two of the mothers and their children still remain at the Almshouse. One foundling

has been received at the house and kindly cared for until sent to an orphans' home. I am happy to report that the general condition of this institution of charity has been very prosperous during the past year, the number of inmates continues small, the amount of sickness outside the hospital rooms has been light. Still the inmates of the hospital department, whose almost uniform condition is that of sickness or extreme feebleness, continue in numbers and condition very nearly the same as in past years, and require the same watchful care. While the whole number of inmates at the Almshouse has become smaller, there has been quite an increase of that class called the mildly insane, who were sent here from the insane asylums of the State. Their numbers have now become so large that it has become a question of some importance how this class of inmates can be well and safely cared for, and the others at the house be fully protected from all danger on their account. Your ever watchful and faithful warden has thus far been able to guard against all danger from this element. Still, my own experience in the past prompts me to suggest the importance of providing a new building for this class, where they may be entirely separated from the other inmates of the institution. The adoption of such a change would secure the fullest protection to all the inmates, and in a short time might become a measure of economy, by caring for a larger proportion of the insane that have a residence in our city. Permit me to suggest, in closing, that I have, in the performance of all my duties, received the kindly aid and sympathy of the warden, the matron, and all their assistants. I also desire to renew the expression of my gratitude to you, gentlemen, for your continued confidence, and for the manifestations of personal and official kindness which I have received at your hands.

Respectfully submitted,

J. R. MORSE.

Cambridge, Dec. 10, 1879.

ANNUAL REPORT

OF THE

CHIEF ENGINEER OF THE CAMBRIDGE FIRE DEPARTMENT,

For the Year ending November 30, 1879.

Chief Engineer's Office, City Hall,
Cambridge, Nov. 30, 1879.

To the Honorable Mayor and the City Council: —

Gentlemen, — In accordance with the requirements of Section 6 of the Ordinance in Relation to the Fire Department, I herewith respectfully present my Annual Report, showing the condition of the Department, the losses by fire, and the amount of insurance thereon, together with a list of names of those composing the force, and an estimate of the value of the property now in charge of the Fire Department and Fire Alarm Telegraph.

Membership.

The number of men now employed in the Department is ninety-six (96) as follows: A chief engineer, three assistant engineers, sixty members of steamer companies, twenty-eight members of hook-and-ladder companies, a relief engineer, a driver of supply hose carriage, and two telegraph operators.

Changes in the Department.

During the year the following changes have taken place in the membership of the companies named: —

Engine Co. No. 1. John E. Belcher was discharged, at his own request, May 10, and John B. Byron was appointed to fill the vacancy, May 16.

Engine Co. No. 2. Amos B. Jarvis, fireman of engine, was discharged at his own request, September 20; Charles E. Connor was appointed fireman of engine, September 24, and John McCarthy was appointed to fill the vacancy, same date.

Engine Co. No. 4. George E. Muzzey, driver of Hose Carriage No. 4, was discharged, April 16, at his own request, and Charles R. Hooker was appointed to fill the vacancy, April 23.

George E. Muzzey was appointed hoseman, September 3, to fill vacancy caused by the transfer of Frank C. Mullett to Engine Company No. 5, July 21. George T. Presby, fireman of engine, was discharged, September 26, for neglect of duty; Benjamin Young was appointed fireman of engine, October 1; and Arthur C. Griffin appointed hoseman, October 8, to fill the vacancy.

Engine Co. No. 5. George W. Butler was discharged at his own request, February 8, and Thomas McIntire, Jr., was appointed to fill the vacancy, same date. Dana R. Hovey and George T. Brown were discharged for neglect of duty, July 21, and William T. King appointed hoseman, August 13.

Hook-and-Ladder Co. No. 1. Lewis C. Clark transferred from driver of Supply Hose Carriage to driver of Hook-and-Ladder Carriage No. 1, June 1, to fill the vacancy caused by the death of George W. Lamson. Albert S. Benson, assistant foreman of Hook-and-Ladder Co. No. 1, was discharged at his own request, June 4, and appointed driver of Supply Hose Carriage, same date. Charles E. Warren was appointed ladderman, June 4, to fill the vacancy.

Appropriation, Receipts, and Expenditures.

The appropriation for this Department made at the beginning of the fiscal year amounted to $50,100, to which an additional appropriation of $1,600 was added near the close of the year, making a total of $51,700. The receipts of the Department have been $220.37. The total expenditure for the year beginning Dec. 1, 1878, and ending Nov. 30, 1879, amounted to $51,664.62, leaving an unexpended balance of $35.38.

The following statement will show the principal items of expenditure: —

Services of members, including salaries of engineers	$32,066.32
Water for hydrants and reservoirs	6,457.00
Repairs of apparatus	2,289.30
Gas	1,599.95
Hay, grain, and straw	2,041.52
Telegraph supplies and repairs	1,143.20
Extra horses and men	1,200.35
Washing and mending bedclothes	397.78
Repairs of houses	571.53
Horse-shoeing	399.71
Harness and repairs	290.58
Exchange of horses	670.00
Veterinary services and medicine	149.00
Labor on hydrants	250.00
Hardware and tools	120.45
Oil and matches	100.54
Water-rates	165.00
Fuel for engines and houses	844.22
Hose and repairs	296.23
Miscellaneous, as per books of Auditor	611.94
	$51,664.62

Appropriation	$51,700.00
Expenditures	51,664.62
Amount unexpended	$35.38

The estimated value of the property owned by the city and in charge of the Fire Department and Fire Alarm Telegraph, houses and land not included, is as follows: —

Apparatus	$35,565.25
Bedding	567.00
Furniture	2,550.00
Horses and harnesses	5,051.00
Tools	495.70
Miscellaneous	849.00
Fire Alarm Telegraph	23,902.88
Total	$68,980.83

Apparatus and Equipments.

The engines are in good working order at the present time, Steamer No. 1 having had a new boiler placed upon it during the early part of the year, being otherwise repaired and put in thorough working order. Engine No. 2 has been in service over six years, and it may be found that the boiler is in the same condition as were those of the other engines repaired during the past two years, and a proper test may show that it will be necessary to have a new boiler placed upon this engine during the coming year.

There are in the Department two spare engines, one of which is used as a relief, the other not being in a serviceable condition. And I would respectfully suggest for your consideration whether it would be economy for the city to cause the latter to be put in order, or to exchange both, as they now stand, for a good reliable engine.

The heater now used in connection with Steamer No. 3, having been in service several years and having been heretofore repaired, is now in a leaky condition ; and I would recommend that a new one be substituted therefor, as in my opinion it would be more economical than to undertake to improve the present one by further repairs.

Relief Valves.

During the year the Committee on Fire Department, in conformity with the recommendation contained in the report of last year, has caused an automatic relief valve of the " Shaw " pattern to be placed upon Engine No. 2, and one of the " Myer " pattern upon Engine No. 4, in order to ascertain which would prove the best working valve, and thus gain information which must be of benefit to the city in case it should be decided to make a purchase in this direction.

This valve being placed upon the engine gives to the hoseman complete control over the amount of water which he throws into the building, as he can at any time stop the flow of water without injury to the hose. Without this valve hosemen are liable to flood the premises which are on fire, and thus damage property more by water than by fire.

Horses.

The total number of horses in the Department at the present time is twenty-one, and nearly all are in good condition at this date.

During the year it was found necessary to dispose of three horses because of lameness, which unfitted them to perform the work of the Department, and others were purchased to take their places; and it may be found beneficial to exchange two or three more this year and replace them by younger animals.

Hose.

The number of feet of hose now in the service of the Department is 11,850, and of this amount 7,750 feet are made of leather and 4,100 feet are what is known as cotton hose. A large portion of the leather hose is not considered reliable; but the present City Council having taken the primary steps towards procuring 3000 feet of the cotton hose, I do not consider that any recommendation is necessary on this important matter.

Houses.

The house of Hook-and-Ladder Carriage No. 2 has been repaired at a small cost during the past season, and in my opinion will not need any further repairs or alterations for a few years. I would, however, respectfully call your attention to the condition of the lower or engine-room floors of the houses occupied by Engines Nos. 4 and 5, they being considerably worn; and the upper floor of the house of Engine Company No. 2, which is very much settled; and I would suggest that the stalls in this last-named house be so arranged that they will face the engine room, as during the excitement attending an alarm of fire the horses are liable to meet with accident in moving from their stalls, as now located, to their places at the pole of the engine or hose-carriage. In my opinion the change could be so effected as to give greater support to the upper floor and better accommodations for extra horses during the winter months. The remaining houses are in good condition at present, and so far as can be seen will need only customary repairs during the coming year.

Fire Alarm Telegraph.

This branch of the service is in good working order, and the only changes which have taken place during the year were the removal and relocation of the wires in two cases, whereby we have avoided the danger of frequent breaks and have made the matter of repairs much more easily attended to.

The telegraph system now consists of five bell-strikers, sixty-one street signal-boxes, three hundred and eighty-five jars of battery, nine engine and police gongs, four automatic repeaters, two switch-boards, five galvanometers, five call-bells, two sounders, two signal-bells, two hundred and eighty-five poles, and eighty-five miles of line wire.

There is also a supply of stock on hand, and a good quantity of tools, a horse and wagon, and other necessary appurtenances for the care and repair of the Fire Alarm.

I would recommend that a street signal-box be located in the vicinity of Winsor and Hampshire Streets; also that a signal-box be placed on or near the pumping station at Fresh Pond, so that in case of accident by fire that important adjunct of our water supply may be placed within quick communication with the Fire Department.

Hydrants and Reservoirs.

The Superintendent of the Water Works has caused the removal of two flush hydrants, and replaced them by others of the post style. He has also located a new post hydrant at the corner of Spring and Sixth Streets.

The whole number of hydrants is 574, of which number 335 are flush or surface style, and 239 are of the post pattern.

The reservoirs are in the same condition as when last reported, no changes or alterations having been made during the year.

Fire Ordinance.

During the year some slight changes have been made in the Ordinance regulating the Fire Department.

Section 2 of said Ordinance has been amended by abolishing the office of Fourth Assistant Engineer.

Section 9 has been so amended as to provide for the re-establishment of the office of Assistant Foreman of the several engine companies.

Section 23 has been so amended that all fines imposed upon members of the Department for absence, as prescribed in said section shall revert to the city treasury. And the same section was further amended by reducing said fines from one dollar to fifty cents.

Accidents.

DECEMBER 25. Frank C. Mullett, of Engine Company No. 4, while returning from an alarm of fire, attempted to jump upon the carriage of Hook and Ladder No. 1, and fell in such a position that the wheel passed over his foot, injuring him severely, and rendering him unable to perform duty for several days.

FEBRUARY 21. Charles E. Berry, engineer of Steamer No. 5, was severely scalded on his face and hands by steam escaping from heater pipes.

MARCH 20. The Department was called to the house No. 26 Essex Street, the alarm being caused by the explosion of a kerosene lamp in the hands of Mrs. Emma D. Dixon, setting fire to her clothing and fatally burning her.

MAY 2. At the burning of the cement manufactory of William F. Webster, an employé named Joseph W. Jordan was badly burned in his face and about the arms and neck while trying to extinguish the fire.

JULY 16. Charles L. Pike, of Hook-and-Ladder Company No. 2, was severely injured by being struck on his left side by a ladder, in attempting to get upon the carriage while responding to an alarm of fire.

JULY 19. While proceeding to the fire at F. L. Chapman & Co's., Hose Carriage No. 4 was disabled by striking the curbstone in attempting to turn the corner of North Avenue and Church Street, the horse becoming unmanageable.

SEPTEMBER 8. In responding to an alarm of fire, Supply Hose Carriage came in contact with Hook-and-Ladder Carriage No. 1 and an express wagon. The driver, Albert S. Benson, was thrown from his seat, and narrowly escaped serious injury.

SEPTEMBER 19. Albert L. Walker, a volunteer, while assisting on the hose of Engine No. 3 during the burning of L. G.

Burnham's store-house, fell from a ladder, severely cutting his head and face.

In responding to an alarm of fire, September 24, Hose Carriage No. 5 ran against the milk-wagon of D. B. Patrick. Owing to the darkness the driver did not see the wagon in time to avoid the collision.

October 16. David J. Campbell, assistant telegraph operator, fell from the roof of a building while in the discharge of his duties, and suffered a severe injury to his back, besides fracturing both ankles, and has been unable to perform any duty since that date.

Obituary.

It is with sincere regret that I here record the death of an active and worthy member of the Department, George W. Lamson, who died May 25. He had been connected with the fire service in this city for a number of years, and was at the time of his death driver of Hook-and-Ladder Carriage No. 1. Being of a friendly nature, and genial in his intercourse with his associates, he won a large number of personal friends, who paid the last tribute of respect to his memory in an appropriate manner, his funeral being attended by the members of the Franklin Hook-and-Ladder Company in a body, by the Board of Engineers, and the Department generally.

Acknowledgments.

In conclusion, I desire to acknowledge myself under many obligations to his Honor the Mayor, Samuel L. Montague, for his attention and courtesy since I assumed the command of the Department on the seventeenth of last April, and to the Joint Standing Committee on Fire Department for the manner in which they have attended to the requirements of the service.

To the Board of Engineers and the officers and members of the several companies I express my earnest thanks for the prompt and efficient manner in which they have performed their duty whenever called upon.

I would also return thanks to Chief of Police Hagar, and the officers under his command, for valuable assistance rendered.

Respectfully submitted,

THOMAS J. CASEY, *Chief Engineer.*

APPENDIX.

Joint Standing Committee on Fire Department.

ALDERMEN . . . . . Smith and Chamberlain.
COUNCILMEN . . . . . Doyle, Parsons, and McPherson.

Board of Engineers.

Name.	Residence.	Rank.	Age.
Thomas J. Casey	173 Cambridge Street .	Chief . . .	46
Richard F. Tobin	5 Winsor Street . . .	1st Assistant	35
Nathaniel W. Bunker	6 Beech Street . . .	2d Assistant	36
Charles W. Brackett	133 Mt. Auburn St. . .	3d Assistant	43
Nathaniel W. Bunker		Secretary .	

Engine Company No. 1.

Location, Brattle Square.

Name.	Occupation.	Rank.	Age.	No. of Badge.
Edward E. Priest	Engineer	Engineer	42	3
Hiram W. Hooker	Driver	Driver	41	5
Robert S. Hixon	,, ...	,,	35	10
William H. Emery	Printer	Foreman	46	1
John H. Brown	Cigar-maker . . .	Asst. For.	28	11
Edward E. Keyes	Book-binder . . .	Fireman	28	7
John L. Jones, Jr.	Printer	Hoseman	28	4
John K. Perkins	Cabinet-maker . .	,,	30	12
Thomas W. Jones	Electrotype-finisher .	,,	30	8
Edward B. O'Brien	Produce-dealer . .	,,	28	9
James Jefferson	Wood-worker . . .	,,	26	2
John B. Byron	Painter	,,	29	6

Engine Company No. 2.

Location, Main Street, near Winsor.

Name.	Occupation.	Rank.	Age.	No. of Badge.
Thomas Wiseman	Engineer	Engineer	35	17
John H. Walker	Driver	Driver	50	19
William H. Foss	,,	,,	39	27
William B. Cade	Polisher	Foreman	45	15
Daniel McCarthy	Blacksmith	Asst. For.	43	21
Charles E. Conner	Machinist	Fireman	28	23
Arthur C. Day	Box-maker	Hoseman	42	25
James Cunningham	Wood-turner	,,	37	28
Benjamin D. Foss	Carpenter	,,	43	18
Albert F. Sawyer	Painter	,,	36	20
Joseph Fellows	Clerk	,,	28	22
John McCarthy	Iron-moulder	,,	29	24

Engine Company No. 3.

Location, Fourth Street, near Cambridge.

Name.	Occupation.	Rank.	Age.	No. of Badge.
Hiram Blood	Engineer	Engineer	47	31
James S. Casey	Driver	Driver	43	33
Lorenzo H. Dale	,,	,,	37	34
William Parker	Carver	Foreman	39	29
William F. Newman	Wood-worker	Asst. For.	33	38
Elliot E. Alley	Upholsterer	Fireman	43	30
Michael G. Collins	Painter	Hoseman	34	36
Edwin Winward	Clerk	,,	33	40
Alexander S. Atkins	Wood-worker	,,	34	35
John Casey	Britannia-worker	,,	29	41
Cornelius J. Donovan	Teamster	,,	35	32
Walter Baker	Organ-pipe maker	,,	25	42

Engine Company No. 4.

Location, North Avenue, near Russell Street.

Name.	Occupation.	Rank.	Age.	No. of Badge.
John E. Ricker	Engineer	Engineer	35	45
Charles R. Hooker	Driver	Driver	35	48
Sylvanus G. Griffin	,,	,,	32	46
John W. Holbrook	Carriage-trimmer	Foreman	38	43
Edgar H. Locke	Provision dealer	Asst. For.	32	53
Benjamin Young	Carpenter	Fireman	35	49
Hugh T. Barker	Confectioner	Hoseman	28	51
J. Herbert Griffin	Carpenter	,,	26	55
William J. Hanna	Plumber	,,	33	50
Charles F. Soule	Painter	,,	37	56
George E. Muzzey	Ice-dealer	,,	37	54
Arthur C. Griffin	Carriage-maker	,,	29	44

Engine Company No. 5.

Location, Inman Square.

Name.	Occupation.	Rank.	Age.	No. of Badge.
Charles E. Berry	Engineer	Engineer	32	102
Joseph P. Cartwright	Driver	Driver	43	104
Francis P. Carr	,,	,,	35	105
Francis P. Scanlan	Painter	Foreman	33	100
Conrad D. Kinnear	Clerk	Asst. For.	40	101
Charles W. Porter	,,	Fireman	31	103
John D. De Ronde	Cabinet-maker	Hoseman	40	108
James F. Glynn	Iron-moulder	,,	28	109
John Fitzgerald	,, ,,	,,	32	110
Thomas McIntire, Jr.	Carriage-painter	,,	27	111
Frank C. Mullett	Confectioner	,,	27	106
William T. King	Painter	,,	23	107

Hook-and-Ladder Company No. 1.

Location, Western Avenue, Central Square Building.

Name.	Occupation.	Rank.	Age.	No. of Badge.
Lewis C. Clark	Driver	Driver	34	78
Charles Emerson	Confectioner	Foreman	34	69
John T. Mahaffy	Carpenter	Asst. For.	34	67
James P. Ewell	Piano-forte key-maker	Ladderman	43	62
Charles H. Wiggin, Jr.	Musician	,,	31	70
Charles H. Waite	Clerk	,,	33	73
William Parks	Iron-moulder	,,	35	77
William H. Lydston	Carpenter	,,	32	68
Clarence A. Moore	Confectioner	,,	29	58
Charles A. Sharon	Machinist	,,	30	64
Joseph B. Farmer	Steam and Gas-fitter	,,	41	74
Warren H. Dow	Box-maker	,,	29	71
Elisha W. Morey	Polisher	,,	32	57
Charles E. Warren	Wood-worker	,,	35	65

Hook-and-Ladder Company No. 2.

Location, Cambridge Street, corner of Portland.

Name.	Occupation.	Rank.	Age.	No. of Badge.
Jeremiah R. Hobbs	Driver	Driver	32	81
Thomas L. Hunter	Iron-moulder	Foreman	39	93
James M. Keaney	Pork-packer	Asst. For.	28	94
Alford F. Chadwick	Carpenter	Ladderman	44	88
Walter R. Marsh	Oil-clothes maker	,,	42	83
Philip C. Munroe	Express-man	,,	38	91
Jacob F. Bradeen	Teamster	,,	46	84
Orville W. Van Duzee	Iron-moulder	,,	33	82
George H. Taylor	Sail-maker	,,	47	79
William Haley	Cabinet-maker	,,	31	86
Charles H. Chapman	Building-mover	,,	26	89
George E. Carter	Picture-frame maker	,,	30	80
Charles L. Pike	Box-maker	,,	31	85
Joseph E. Chick	,, ,,	,,	29	87

Supply Hose No. 1.

Location, Green Street, Central Square Building.

Name.	Occupation.	Rank.	Age.	No. of Badge.
Albert S. Benson	Driver	Driver .	35	72

Relief Engineer.

Name.	Occupation.	Rank.	Age.
John D. Thompson	Engineer	Engineer . . .	38

Fire-Alarm Telegraph.

Location, Battery Room, Brattle Square.

Name.	Occupation.	Rank.	Age.
George J. Blaisdell . . .	Telegraph Operator .	Telegraph Operator .	35
David J. Campbell . . .	Assistant Operator .	Assistant Operator .	32

Fires by Wards.

The total number of fires and alarms during the year was seventy-nine (79), and the following table will show the location of fire alarms by wards, from December 1, 1878, to November 30, 1879.

Wards.	Dec.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Totals.
1 . . .	2	1	2	2	1	2	–	2	3	1	–	1	17
2 . . .	–	–	6	1	–	3	1	1	1	3	2	2	20
3 . . .	1	–	1	1	–	2	–	2	1	3	–	–	11
4 . . .	3	–	1	2	1	4	1	2	1	1	3	1	20
5 . . .	–	1	2	1	2	–	–	–	–	2	2	1	11
Totals . .	6	2	12	7	4	11	2	7	6	10	7	5	79

The amount of loss by fire during the year was . .	$70,419.24
The insurance paid on the same was	66,313.63
Amount of loss over insurance was	$4,105.61

FIRES AND ALARMS.

For the Year commencing Dec. 1, 1878, and ending Nov. 30, 1879.

DECEMBER.

Saturday, Dec. 7, 10.29, p.m. Box 46.

Main Street. Wood-shed owned and occupied by C. F. M'Clure. Loss trifling. Fire caused by hot ashes in barrel.

Monday, Dec. 9, 9.09, p.m. Box 14.

Cambridge Street. Dwelling-house owned and occupied by Wendell Rosenberger. No loss. Fire caused by burning soot in chimney.

Wednesday, Dec. 11, 7.32, p.m. Box 25.

Pacific Street. Stable owned by J. G. Russell and occupied by Jaynes & Co. Loss trifling. Fire caused by smoking in loft of stable.

Friday, Dec. 13, 3 01, a.m. Box 24.

Hamilton Street. Unoccupied dwelling-house owned by Ann Fallon. Cause of fire incendiary. Loss on building, $1,000. Insurance on same, $1,000.

Friday, Dec. 20, 8.51, a.m. Box 43.

Grant Street. Dwelling-house owned and occupied by Michael Martin. Loss trifling. Fire caused by burning rags on stove.

Wednesday, Dec. 25, 1.15, a.m. Box 78.

Belmont. Fire in Belmont; assistance rendered.

JANUARY.

Tuesday, Jan. 14, 12.55, p.m. Box 59.

Harvard Square. Building used for stores and lodging-rooms. Owned by William Read, and occupied by Amee & Co. and others. Loss on building and contents, $860. Insurance on same, $760. Fire caused by hot coals dropping from open grate. Assistant Engineer Bunker absent, — out of the city.

Monday, Jan. 27, 6.57, a.m. Box 68.

White Street. Greenhouse owned and occupied by Mrs. William Hutchins. Loss, $150. No insurance. Fire caused by wood placed on heater to dry. Assistant Engineer Bunker absent, — out of the city.

FEBRUARY.

SATURDAY, Feb. 1, 2.10, P.M. Box 6.

Pioneer Avenue. Dwelling-house owned by William Black, and occupied by several parties. Loss, $25. No insurance. Cause of fire, burning of bedding.

WEDNESDAY, Feb. 12, 8.43, P.M. Box 59.

Harvard Square. Building used for stores and lodging-rooms. Owned by William Read. Occupied by Amee & Co. and others. Cause of fire unknown. Loss, $50. Insurance, $50.

SATURDAY, Feb. 15, 1.34, A.M. Box 9.

Cambridge Street. Furniture manufactory. Owned by Warren Institution for Savings. Occupied by the F. M. Holmes Furniture Company. Cause of fire spontaneous combustion. Loss trifling.

SUNDAY, Feb. 16, 2.28, P.M. Box 91.

Cameron Street. Fire caused by sparks from a locomotive setting fire to grass and fence. Loss trifling. Owner of property unknown.

FRIDAY, Feb. 21, 5.54, A.M. Boxes 69 and 82.

Lakeview Avenue. Dwelling-house owned and occupied by Mrs. William J. Pierce. Fire caused by overheated furnace. Loss, $3,000. Insurance, $3,000. Also dwelling-house adjoining, owned and occupied by M. J. Putney. Set on fire by the heat from the burning of the above-mentioned house. Loss, $3,500. Insurance, $3,500.

SATURDAY, Feb. 22, 8.40, A.M. Box 25.

Sceva Place. Dwelling-house owned and occupied by J. C. Smith. Loss, $320. Insurance, $220. Fire caused by thawing out water-pipe.

MONDAY, Feb. 24, 12.25, P.M. Box 27.

(A general alarm was given for this fire, calling out the entire Fire Department.)

Broadway. Confectionery manufactory owned and occupied by George Close. Loss, $8,966.00. Insurance, $7,218.97. Cause of fire unknown.

Also the dwelling-house of H. C. Shaw on Winsor Street, and the building of H. M. Phinney, occupied as a store and dwelling by H. M. Phinney and others. Loss to H. C. Shaw, $130. Insurance, $130. Loss on the latter building, $6,700. Insurance, $6,700.

WEDNESDAY, Feb. 26, 9.28, P.M. Box 31.

Rear of Cambridge Street. Club room owned by Daniel Boyle. Occupied by private club. Loss trifling. Cause of fire unknown.

FRIDAY, Feb. 28, 12.06, A.M. Box 16.

Broadway. Musical Instrument Action Manufactory. Owned and occupied by Sylvester Tower. Loss trifling. Fire caused by shavings taking fire in boiler room.

MARCH.

SUNDAY, March 2, 8.01, P.M. Box 46.

Franklin Street. Dwelling-house owned and occupied by Mathew Doherty. Loss trifling. Fire caused by the burning of rags.

Tuesday, March 6, 8.16, A.M. Box 13.

Cambridge Street. Dwellings and Store owned by Mrs. Hammond and E. H. Blake, and occupied by several parties. Loss to Mrs. B. B. Hammond, $167. Insurance, $167. Loss to E. H. Blake, $250. Insurance, $250. Loss to John R. Fairbairn, $50. No insurance. Fire caused by a defective chimney.

Friday, March 7, 9.30, P.M. Box 49.

Baldwin Court. Dwelling-house owned and occupied by A. McCaughey. Loss, $750. Insurance, $750. Cause of fire, defective chimney.

Tuesday, March 11, 8.30, A.M. Box 42.

River Street. Cement manufactory. Owned by Holmes & Rugg. Occupied by L. L. Marble. Loss, $50. No insurance. Cause of fire, boiling over of tar-kettle.

Sunday, March 16, 1.35, A.M. Box 65.

Bowdoin Street. Carpenter's shop. Owned and occupied by M. F. Tracy. Loss trifling. Cause of fire, spontaneous ignition of oily sawdust.

Thursday, March 20, 11.12, A.M. Box 43.

Flagg Street Court. Dwelling-house owned by F. R. Trow. Occupied by several parties. Loss, $4. Insurance, $4. Cause of fire unknown.

Thursday, March 20, 6.44, P.M. Box 36.

Ashburton Place. Dwelling-house owned by Alexander Dickinson. Occupied by Charles S. Dixon. Loss on property trifling. Cause of fire, the explosion of a kerosene lamp, by which the clothing of Mrs. Emma D. Dixon was set on fire, and she was fatally burned.

APRIL.

Friday, April 4, 8.04, P.M. Box 25.

Front Street Court. Dwelling-house owned and occupied by John Mulligan. Loss, $125. Insurance, $125. Cause of fire unknown.

Friday, April 11, 8.21, P.M. Box 51.

Trowbridge Street. Dwelling-house owned by William J. Marvin. Occupied by A. A. Wyeth. Loss trifling. Fire caused by lighted pipe in overcoat pocket.

Sunday, April 13, 12, P.M. Box 72.

Spruce Street. Stable owned and occupied by John Leahey. Loss, $50. No insurance. Cause of fire unknown.

Monday, April 21, 4.18, P.M. Box 72.

Montgomery Street. Dwelling-house owned by Mrs. M. E. Brooks, and occupied by Jeremiah Ryan. Loss trifling. Cause, children playing with fire.

MAY.

Thursday, May 1, 4.07, and 5.00, A.M. Box 38.

(Two alarms were given.)

Magazine Street. Dwelling-house owned and occupied by Mrs. M. J. Barry. Loss on building and contents, $450. Insurance, $450. Fire caused by overheated furnace.

Friday, May 2, 2.27, P.M. Box 17.

Main Street. Cement manufactory owned and occupied by W. F. Webster. Loss, $600. No insurance. Fire caused by cement boiling over.

Tuesday, May 6, 6.43, A.M. Box 8.

Third Street. Dwelling-house owned and occupied by Mrs. Margaret Duff. Loss trifling, burning of an overcoat. Cause unknown.

Saturday, May 10, 1.45, A.M. Box 27.

Broadway. Stable owned by Denis McCarty and unoccupied. Loss, $3. Insurance, $3. Cause, incendiary.

Saturday, May 10, 4.45, P.M. (Still alarm.)

Green Street. Dwelling-house owned by Gardner Thwing, and occupied by J. A. Smith. Loss trifling. Cause, sparks from chimney setting fire to roof. Truck No. 1 and Supply Hose in service.

Thursday, May 15, 1.34, P.M. Box 17.

Main Street. Dwelling-house owned by B. & A. R. R., and occupied by Isaac Pendleton. Loss trifling. Cause of fire unknown.

Thursday, May 15, 4.48, P.M. Box 46.

Franklin Street. Dwelling-house owned by John Murphy, and occupied by Jacob Hucson. Loss trifling. Cause, sparks from chimney setting fire to roof.

Thursday, May 15, 8.23, P.M. Box 79.

Sparks Street. Cause of fire, burning of brush in a vacant lot.

Friday, May 30, 12.33 P.M. Box 12.

Bridge Street. Coal-shed owned by Brooks's Heirs, and occupied by L. G. Burnham & Co. Loss trifling. Cause of fire, sparks from a locomotive. Assistant Engineer Tobin absent, attending decoration ceremonies at cemetery.

Friday, May 30, 5.46, P.M. Box 78.

Concord Avenue. Ice-house owned by Tudor Estate and unoccupied. Loss trifling. Cause of fire unknown.

JUNE.

Friday, June 13, 7.41, P.M. Box 34.

Elm Street. Dwelling-house owned by the Boston Five Cent Savings Bank, and occupied by John Hoffman and others. Loss, $100. Insurance, $100. Cause of fire unknown.

Friday, June 20, 1.20, P.M. Box 24.

Pearl Street. Building used for storage. Owned and occupied by C. L. Jones & Co. Loss trifling. Fire caused by sparks from chimney.

JULY.

Friday, July 4, 12.50, P.M. Box 25.

Front Street. Dwelling-house owned by John M. St. Clair. Occupied by E. Berrick and L. G. Scanlan. Loss, $600. Insurance, $450. Cause of fire, defective chimney. Also the dwelling-house owned by Mrs. Sarah A. E. Pear, and occupied by H. A.

Mitchell, and the dwelling-house owned and occupied by John White. Loss on the property of Mrs. Pear, $70. Insurance, $70. Fire caused by sparks from burning building. Loss on the property of John White, $63.50. Insurance, $63.50. Fire caused by sparks from steam fire engine.

FRIDAY, July 4, 2.31, P.M. Box 13.

Gore Street. Organ manufactory and dwelling-house owned by Shorfenburg Heirs. Factory occupied by S. S. Hamill, the dwelling occupied by L. F. Zoller. Loss trifling. Fire caused by fire-crackers.

MONDAY, July 7, 1.41, P.M. Box 28.

Portland Street. Dwelling-house owned by John Hilley and unoccupied. Loss, $22.44. Insurance, $22.44. Cause of fire unknown. Chief Engineer Casey absent, out of the city on business connected with the Department.

WEDNESDAY, July 16, 4.30, P.M. (Bell alarm.)

Pleasant Street. Stamped tin-ware manufactory. Owned and occupied by the Dover Stamping Co. No loss. Cause of fire, hot coals from charcoal furnace of workmen repairing roof.

SATURDAY, July 19, 3.22, P.M. Box 12.

Gore Street. Formerly stable owned by Brooks's Heirs. Unoccupied. No loss. Fire caused by children playing with matches.

SATURDAY, July 19, 3.33, P.M. Box 61. (A second alarm was given for this fire.)

Brattle Street. Carriage manufactory owned by F. L. Chapman, and occupied by F. L. Chapman & Co. Fire caused by sparks from chimney. Loss on building, $1287.92. Insurance, $1287.92. Loss on contents, $312.08. Insurance, $153.50. Also the adjoining building, owned by William L. Whitney, and occupied by several parties as stores and offices, damaged to the amount of $56. Insurance on same, $56.

AUGUST.

SATURDAY, August 2, 4.07, P.M. Box 9.

First Street. Boiler and fuel room owned by Nancy D. Woodbury. Occupied by William H. Hazlett & Co. Fire caused by sparks from furnace. Loss, $150. Insurance, $150.

SUNDAY, August 3, 9.33, P.M. Boxes 78 and 82.

Concord Avenue. Ice-house owned by Tudor Estate and unoccupied. Cause incendiary. Loss, $500. No insurance. Also the dwelling-house owned by John Malloy, and occupied by John Malloy and others. Loss, $325. Insurance, $325. Also the crossing signs and gate of the Fitchburg Railroad Company. Loss, $10. No insurance.

WEDNESDAY, August 6, 2.32, P.M. Box 78.

Concord Avenue. Rekindling of fire in tan at ice-house.

WEDNESDAY, August 13, 2.14, P.M. Box 37.

Western Avenue. Dwelling-house owned and occupied by G. D. Jackson. Cause of fire unknown. Loss, $1,000. Insurance, $1,000.

TUESDAY, August 26. 8.53, P.M. Box 16.

Broadway. Wood and ivory turning establishment owned by A. B. Phillips, and occupied by Richard Ela. Cause of fire unknown. Loss, $200. Insurance, $200.

SEPTEMBER.

Monday, Sept. 8, 6.46, P.M. Box 71.

North Avenue. Currying establishment owned and occupied by Ferdinand Fischer. Cause of fire unknown. Loss, $34,000. Insurance, $34,000.

Tuesday, Sept. 9, 1.18, P.M. Box 6.

Broadway. Dwelling-house owned by Patrick Hughes, and occupied by James Walsh. Cause of fire, soot burning in chimney. No loss.

Sunday, Sept. 14, 11.22, P.M. Box 23.

Auburn Street. Building used for store and storage. Owned by J. G. Gooch, and occupied by Charles H. Sanborn. Cause of fire unknown. Loss, $212.50. Insurance, $112.50.

Wednesday, Sept. 17, 9.48, A.M. Box 32.

Columbia Street. Dwelling-house owned and occupied by Thomas Casey. Cause of fire, children playing with lighted wood. Loss, $10. Insurance, $10.

Friday, Sept. 19, 5.20, P.M. Boxes 12 and 9.

Bridge Street. Hay barn and office owned by Brooks's Heirs, and occupied by L. G. Burnham & Co. Fire supposed to have been set by boys. Loss on building and contents, $801.20. Insurance, $801.20.

Friday, Sept. 19, 8.00, P.M. Box 6.

Pioneer Street. Dwelling-house owned by Mary O'Neil. Unoccupied. Cause of fire incendiary. Loss, $15. Insurance, $15.

Wednesday, Sept. 24, 4.25, A.M. Box 7.

Conlan Court. Dwelling-house owned by Patrick Conlan, and occupied by F. A. Mason. Cause of fire unknown. Loss trifling.

Thursday, Sept. 25, 4.00, P.M. Box 49.

Kirkland Street. Dwelling-house owned by Mrs. R. Rotch, and occupied by W. R. Ellis. Cause of fire, hot ashes in a wooden box. Loss, $175. Insurance, $175. Absent, Assistant Engineer Brackett, out of the city.

OCTOBER.

Wednesday, Oct. 8, 4.12, A.M. Box 31.

Warren Street. Dwelling-house owned by city of Cambridge, and occupied by several families. Cause of fire, defective chimney. Loss, $15. No insurance.

Tuesday, Oct. 14, 4.00, P.M. Box 68.

Somerville. Fire in Somerville near Cambridge line. Services not needed.

Tuesday, Oct. 21, 3.20, A.M. Box 21. (Two alarms.)

Brookline Street. Dwelling-house owned by G. W. Chipman, and occupied by Joseph Tryon. Cause of fire unknown. Loss on building and contents, $1,960. Insurance on same, $1,960.

Tuesday, Oct. 21, 5.21, A.M. Box 21.

Brookline Street. Dwelling-house owned and occupied by G. W. Chipman. Fire worked through partition wall, doing trifling damage.

Monday, Oct. 27, 11.31, A.M. Box 72.

Cedar Street. Dwelling-house owned by Franklin Insurance Co., and occupied by George Gurnett and others. Cause of fire, drying wood in stove oven. No loss.

Friday, Oct. 31, 6.28, P.M. Box 31.

Somerville. Fire in Somerville, near Cambridge line.

NOVEMBER.

Saturday, Nov. 8, 9.15, P.M. Box 17.

Broadway. Finishing-room of organ manufactory, owned and occupied by Mason & Hamlin. Cause of fire, spontaneous ignition of oily working clothes. Loss, $1033.60. Insurance, $1033.60.

Sunday, Nov. 16. 7.41, P.M. Box 29.

Pine Street. False alarm caused by some malicious person, the box having been found open on the arrival of the Department. Absent, Assistant Engineer Tobin, out of the city.

Wednesday, Nov. 19, 5.35, P.M. Box 42.

Blackstone Street. Store-house owned and occupied by H. O. Houghton & Co. Cause of fire, a boy drawing kerosene oil from barrel and carelessly lighting a match. Loss trifling.

Saturday, Nov. 22, 2.37, P.M. Box 75.

Walden Street. Brick-kiln shed owned and occupied by J. L. Sands. Caused by sparks from burning brick-kiln. Loss, $300. No insurance.

Thursday, Nov. 27. (Bell alarm, Ward 1.)

Boston. Fire in Brighton District. Engine No. 1 responded under command of Assistant Engineer Brackett.

HYDRANTS.

(*Corrected List.*)

Located in Ward One.

Appleton Street, corner Highland.
Ash Street, corner Acacia.
Baldwin Street, corner Emmons Place.
Banks Street, corner Flagg.
Banks Street, corner Cowperthwaite.
Banks Street, corner Grant.
Bow Street, corner Linden (post).
Brattle Street, opposite the estates of Messrs. Longfellow and Hastings.
Brattle Street, corner Ash.
Brattle Street, corner Hilliard.
Brattle Street, corner University Press estate.
Brattle Street, corner Lowell.
Brattle Street, corner Fresh Pond Lane.
Brattle Street, opposite Mount Auburn greenhouse.
Brattle Street, front of Mrs. Wyeth's estate.
Brattle Street, corner Willard.
Brattle Street, corner Story.
Brattle Street, corner Channing.
Brattle Street, corner Lakeview Avenue.
Brattle Street, corner Hawthorn (post).
Brattle Street, near Brighton (post).
Brighton Street, corner Winthrop (post).
Brighton Street, corner Eliot (post).
Broadway, junction Cambridge Street.
Broadway, near junction Cambridge Street (post).
Broadway, corner Prescott Street.
Broadway, corner Trowbridge Street.
Broadway, corner Quincy Street.
Broadway, corner Ware Street.
Broadway, corner Ellery Street.
Buckingham Street, opposite Stevens's barn.
Buckingham Street, corner Concord Avenue (post).
Cambridge Street, corner Trowbridge.
Cambridge Street, corner Sumner.
Cambridge Street, front of Scientific School (post).
Cambridge Street, corner Quincy (post).
Cambridge Street, opposite Felton (post).
Cambridge Street, corner Ellery (post).
Chauncy Street, near Garden (post).
Chauncy Street, corner Langdon.
Church Street, corner Palmer.
Concord Ave., junction Waterhouse St.
Concord Avenue, corner Sparks Street.
Concord Avenue, opposite Craigie Street.
Concord Avenue, cor. Follen Street (post).
Concord Avenue, cor. Sparks Street (post).
Coolidge Avenue, between Mt. Auburn Street and Cambridge Cemetery Gate, (2 posts).
Craigie Street, midway.
Craigie Street, near corner Sparks.
De Wolf Street, near Cowperthwaite.
Divinity Avenue, opposite Museum.
Dunster Street, corner South.
Dunster Street, corner Mt. Auburn.
Dunster Street, near Harvard Square (post).
Eliot Street, in elbow (post).
Eliot Street, corner Winthrop (post).
Ellery Street, corner Main.
Ellery Street, east side, midway between Broadway and Cambridge Street.
Elmwood Avenue, midway (post).
Everett Street, south side, midway between North Avenue and Oxford Street.
Fayerweather Street, corner Brattle.
Fayerweather Street, opposite Reservoir.
Foster Street, corner Brown (post).
Garden Street, near Chauncy (post).
Garden Street, corner Mason.
Garden Street, corner Wallace.
Grant Street, corner De Wolf.
Harvard Square, opposite Charles River Bank (post).

Harvard Street, corner Remington.
Harvard Street, opposite Harvard Block (post).
Harvard Street, opposite Linden (post).
Harvard College Grounds (three posts).
Hawthorn Street, corner Acacia (post).
Kirkland Street, near Baldwin, south side.
Kirkland Street, corner Trowbridge, south side.
Kirkland Street, corner Irving, south side.
Kirkland Street, corner Sumner, south side.
Kirkland Street, corner Quincy, south side.
Kirkland Street, opposite Memorial Hall.
Lakeview Avenue, 500 feet from Brattle Street.
Lakeview Avenue, near Brattle Street (post).
Lakeview Avenue, corner Huron Street (post).
Lakeview Avenue, on hill (post).
Lakeview Ave., near Engine House (post).
Langdon Street, in elbow (post).
Main Street, junction Harvard.
Main Street, corner Trowbridge.
Main Street, near Baptist Church.
Mellen Street, corner Oxford.
Mill Street, corner Holyoke (post).
Mill Street, corner Charles River.
Mt. Auburn Street, corner Brighton (post).
Mt. Auburn Street, corner Brewer.
Mt. Auburn Street, opposite Athens.
Mt. Auburn and Bow Streets.
Mt. Auburn Street, opposite De Wolf.
Mt. Auburn Street, corner Willard (post).
Mt. Auburn Street, corner Sparks (post).
Mt. Auburn Street, opposite McDonald's Marble Works.
Mt. Auburn Street, near railroad stables, in Belmont.
Mt. Auburn Street, near Lowell (post).
Mt. Auburn Street, corner Dunster (post).
Mt. Auburn Street, corner Holyoke (post).
Mt. Auburn Street, corner Athens (post).
Mt. Auburn Street, corner Banks (post).
Mt. Auburn Street, corner De Wolf (post).
Mt. Auburn Street, corner Story (post).
Mt. Auburn Street, corner Hilliard (post).
Mt. Auburn Street, opposite City Building (post).
Mt. Auburn Street, opposite Brewer (post).
Mt. Auburn Street, near car-stables, in Belmont (post).
Mt. Auburn Street, opposite Bath (post).
Mt. Auburn Street, near Coolidge Lane (post).
Mt. Auburn Street, corner Elmwood Avenue (post).
Mt. Auburn Street, corner Channing (post).
Murray Street, near Charles River.
North Avenue, corner Chauncy Street.
North Avenue, corner Shepard Street (post).
North Avenue, corner Holmes Place.
North Avenue, corner Jarvis Street.
North Avenue, front of burial-ground (post).
North Avenue, corner Church Street.
North Avenue, corner Garden Street (post).
Oxford Street, near Jarvis.
Oxford Street, corner Everett.
Phillips Place, corner Berkeley Street.
Prescott Street, corner Harvard.
Prescott Street, between Harvard Street and Broadway (post).
Putnam Avenue, corner Western Avenue.
Putnam Avenue, between Mt. Auburn and Main (post).
Putnam Avenue, corner Flagg Street (post).
Putnam Avenue, opposite Putnam Court (post).
Putnam Avenue, near Hews Street (post).
Putnam Avenue, corner Sands Street (post).
Quincy Street, midway between Harvard and Broadway (post).
Sands Street, opposite Planing Mill.
South Street, corner Dunster (post).
Sparks Street, corner Vassal Lane (post).
Sparks Street, corner Foster (post).
Sparks Street, opposite Charles T. Russell's.
Trowbridge Street, midway between Main and Harvard (post).
Waterhouse Street, opposite Follen (post).
Wendell Street, near Carver (post).
Willard Street, corner Foster (post).
Worthington Street, near Engine House Water-Works (post).

Located in Ward Two.

Amory Street, corner Summer.
Antrim Street, near Broadway.
Antrim Street, near Cambridge (post).
Antrim Street, midway (post).
Austin Street, corner Essex (post).
Austin Street, corner Prospect (post).
Austin Street, corner Temple (post).
Bigelow Street, midway between Main and Harvard.
Brewery Street, near Hastings (post).
Bristol Street, corner Portland (post).
Broadway, corner Highland Avenue.
Broadway, corner Third Street.
Broadway, corner Hancock Street.
Broadway, corner Antrim Street.
Broadway, corner Tremont Street (post).
Broadway, corner Elm Street.
Broadway, corner Dock Street.
Broadway, corner Dana Street.
Broadway, corner Ellsworth Avenue.
Broadway, corner Fayette Street.
Broadway, corner Amory Street.
Broadway, corner Norfolk Street.
Broadway, corner Boardman Street.
Broadway, opposite Thayer's Laboratory.
Broadway, near Broadway House.
Broadway, corner Clark Street (post).
Broadway, corner Third Street (post).
Broadway, corner Davis Street (post).
Broadway, corner Brewery Street (post).
Broadway, opposite Mason & Hamlin's building (post).
Broadway, near Sixth Street (post).
Broadway, corner Pioneer Street (post).
Cambridge Street, corner Harding.
Cambridge Street, corner Norfolk.
Cambridge Street, corner Willow.
Cambridge Street, corner Prospect (post).
Cambridge Street, corner Tremont.
Cambridge Street, opposite Fayette.
Cambridge Street, north side, near Springfield.
Cambridge Street, opposite head of Maple Avenue.
Cambridge Street, corner McCabe (post).
Cambridge Street, corner Elm (post).
Cambridge Street, corner Winsor (post).
Cambridge Street, near Mr. Rafferty's house (post).
Cambridge Street, nearly opposite Ellsworth Avenue (post).
Centre Street, opposite Dana School-house.
Clinton Street, near G. T. Gale's house (post).
Columbia Street, corner Lincoln.
Columbia Street, corner Market.
Columbia Street, corner Hampshire.
Columbia Street, corner Harvard.
Dana Street, corner Chatham (post).
Davis Street, corner Broadway.
Elm Street, opposite Lincoln (post).
Elm Street, corner Market.
Essex St., westerly side, midway between Harvard and Austin (post).
Fayette Street, 500 feet from Broadway.
Hampshire Street, corner Amory (post).
Hampshire Street, near Somerville line (post).
Hampshire Street, corner Portland (post).
Harvard Street, corner Pine.
Harvard Street, corner Hancock.
Harvard Street, corner Clark.
Harvard Street, corner Dana.
Harvard Street, corner Moore.
Harvard Street, corner Norfolk.
Harvard Street, corner Portland.
Harvard Street, corner Brewery.
Harvard Street, corner Clinton.
Harvard Street, near R. R. crossing (post).
Harvard Street, between R. R. crossing and Brewery Street (post).
Harvard Street, opposite Davis (post).
Harvard Street, corner Cherry (post).
Harvard Street, corner Winsor (post).
Harvard Street, opposite Elm (post).
Harvard Street, corner Essex (post).
Harvard Street, corner Prospect (post).
Harvard Street, between Prospect and Inman Streets (post).
Harvard Street, corner Bigelow (post).
Harvard Street, corner Lee (post).
Highland Avenue, east side, midway.
Houghton Street, cor. Bolton, in Somerville.
Hunting Street, 400 feet from Cambridge.
Inman Street, near Austin.
Inman Street, corner Harvard.
Inman Street, corner Broadway.
Inman Street, corner Summer.

Jefferson Street, corner Harding.
Jefferson Street, corner Warren (post).
Lee Street, midway between Main and Harvard Streets (post).
Main Street, corner Lee.
Main Street, corner Hancock.
Main Street, opposite Bay.
Main Street, corner Pelham (post).
Main Street, corner Essex.
Main Street, opposite Pleasant.
Main Street, corner Bigelow.
Main Street, junction Harvard.
Main Street, corner Pioneer (post).
Main Street, opposite Rawson & Hittinger's.
Main Street, opposite Pearl (post).
Main Street, Gale & Wood's driveway (post).
Maple Avenue, midway between Broadway and Cambridge Street.
Market Street, corner Union.
Moore Street, head of Hastings.
Norfolk Street, corner Hampshire.
Norfolk Street, corner Worcester.
Norfolk Street, head of Washington (post).
Oak Street, west side, near Somerville line.
Plymouth Street, corner York.
Portland Street, opposite Rolling-Mill (post).
Prospect Street, opposite B. Tilton's.
Prospect Street, corner Broadway.
Prospect Street, corner Hampshire.
Prospect Street, corner Main.
Prospect Street, corner Gardner.
Prospect Street, opposite school-house, Somerville.
Prospect Street, corner Webster Avenue, Somerville.
Seckel Street, corner Webster Avenue (post).
South Street, opposite Willow, Somerville.
South Street, corner Gore, Somerville.
Tremont Street, near Wellington's house (post).
Tremont Street, near Hampshire (post).
Tremont Street, opposite Gardner (post).
Union Street, corner Hampshire.
Ward Street, corner Horace, Somerville.
Webster Avenue, corner Elm.
Webster Avenue, corner Bristol.
Webster Avenue, corner Winsor.
Webster Avenue, corner Hampshire.
Webster Avenue, corner Plymouth.
Webster Avenue, corner Cambridge Street (post).
West Boston Bridge.
West Boston Bridge.
West Street, midway (post).
Winsor Street, corner Lincoln.
Winsor Street, corner Hampshire.
Winsor Street, corner Washington.
Winsor Street, near Somerville line (post).
Winsor Street, corner Broadway (post).

Located in Ward Three.

Bridge Street, at Wellington's Wharf (post).
Bridge Street, at Sanborn's Wharf (post).
Bridge Street, corner Prison Point.
Bridge Street, corner Short.
Bridge Street, corner Short (post).
Bridge Street, corner Water.
Bridge Street, opposite Bay State Glass-house.
Bridge Street, near Bay State Glass-house (post).
Bridge Street, north side, opposite Braman, Shaw, & Co.'s.
Bridge Street, opposite Fourth (post).
Bridge Street, between Short and Water (post).
Bridge Street, near Cambridge (post).
Bridge Street, corner Water (post).
Bridge Street, corner East (post).
Cambridge Street, opposite First.
Cambridge Street, corner Carson.
Cambridge Street, corner Daily's Alley.
Cambridge Street, corner Third.
Cambridge Street, junction Bridge.
Cambridge Street, corner Sixth.
Cambridge Street, near railroad crossing (post).
Cambridge Street, opposite Seventh (post).
Cambridge Street, opposite No. 141 (post).
Cambridge Street, near Third (post).
Cambridge Street, corner Fourth (post).
Charles Street, corner Fourth.

East Street, corner North (post).
Eighth Street, corner Cambridge.
Fifth Street, corner Winter (post).
Fifth Street, corner Charles.
Fifth Street, corner Spring.
Fifth Street, corner Cambridge.
Fifth Street, corner Gore.
First Street, near Otis (post).
First Street, corner Spring (post).
Fourth Street, corner Winter (post).
Fourth Street, corner Winter.
Fourth Street, corner Cambridge.
Fourth Street, corner Vine.
Fourth Street, corner Thorndike.
Gore Street, corner Fourth.
Gore Street, corner Carson (post).
Gore Street, corner Carson.
Gore Street, corner Seventh (post).
Gore Street, between Fourth and Fifth (post).
Gore Street, between Fifth & Sixth (post).
Munroe Street, corner Third (post).
North Street, corner East.
North Street, near Glass Company's cutting-shop.
Otis Street, corner Third.
Otis Street, corner Seventh.
Otis Street, corner Ninth.
Potter Street, corner Ninth (post).
Prison Point St., 50 feet north of Ice Sheds.
Prison Point Street, on railroad track, 300 feet from Street.
Prison Point Street, near passenger track (post).
Prison Point Street, on railroad track, 600 feet from Street.
Prison Point Street, 400 feet from Bridge Street.
Prison Point Street, near Bridge (post).
Prison Point Street, near Ice House (post).
Second Street, corner Thorndike.
Second Street, corner Otis.
Second Street, corner Cambridge.
Sixth Street, corner Gore.
Sixth Street, corner Potter.
Sixth Street, corner Charles (post).
Sixth Street, corner Spring (post).
Spring Street, corner Second.
Spring Street, corner Third.
Spring Street, corner Fourth.
Third Street, corner Vine.
Third Street, near Charles (post).
Third Street, corner Bridge (post).
Third Street, corner Potter.
Third Street, opposite Gas-Works (post).
Thorndike Street, corner Sixth.
Thorndike Street, corner Fifth.
Thorndike Street, near Woodbury's mill (post).
Thorndike Street, corner Second (post).
Vine Street, corner Fifth.
Vine Street, corner Sixth.
Water Street, near Sugar-house.
Yard of J. P. Squire & Co. (post).

Located in Ward Four.

Austin Street, corner Douglass (post).
Austin Street, corner Norfolk (post).
Blackstone Street, west side, 100 feet from Avenue (post).
Brookline Street, corner Allston.
Brookline Street, corner Hamilton.
Brookline Street, corner Valentine.
Brookline Street, corner Putnam Avenue.
Brookline Street, corner Erie.
Brookline Street, corner Franklin.
Brookline Street, corner Chestnut.
Brookline Street, near Henry (post).
Brookline Street, corner Decatur (post).
Brookline Street, corner Lopez (post).
Brookline Street, corner Watson (post).
Cherry Street, opposite Eaton.
Chestnut Street, corner Pearl.
Columbia Street, corner Austin.
Columbia Street, corner Washington.
Cottage Street, corner Pearl (post).
Eaton Street, corner Pine (post).
Erie Street, corner Pearl (post).
Erie Street, between Pearl and Brookline (post).
Fairmont Street, corner Andrew (post).
Franklin Street, corner Soden (post).
Franklin Street, corner Hancock.
Franklin Street, corner Bay.
Franklin Street, near the hill.
Franklin Street, corner Sydney.
Franklin Street, corner Magazine.
Franklin Street, corner Pleasant.

Franklin Street, near Putnam Avenue (post).
Front Street, junction State.
Front Street, corner Columbia (post).
Green Street, opposite Vernon.
Green Street, corner Putnam Avenue.
Green Street, corner Hancock (post).
Green Street, corner Bay (post).
Green Street, midway between Hancock and Vernon (post).
Green Street, corner Vernon (post).
Green Street, corner Pleasant (post).
Green Street, corner Western Avenue (post).
Green Street, corner Pearl (post).
Green Street, corner Brookline (post).
Hews Street, corner Putnam Avenue.
Kinnaird Street, corner Bay (post).
Magazine Street, corner Cottage.
Magazine Street, corner Putnam Avenue.
Magazine Street, corner Warland.
Magazine Street, corner Auburn.
Magazine Street, corner Park.
Magazine Street, corner Upton.
Magazine Street, opposite Hamilton.
Magazine Street, opposite Allston (post).
Magazine Street, corner Florence.
Magazine Street, corner Green (post).
Main Street, corner Harrison (post).
Main Street, corner Columbia.
Main Street, corner Winsor.
Main Street, corner Norfolk.
Main Street, junction Austin.
Main Street, north side, opposite Kennedy's bakery.
Main Street, corner Washington.
Main Street, corner Brewery.
Main Street, corner Portland.
Osborn Street, corner State (post).
Osborn Street, corner Main (post).
Pacific Street, corner Sydney.
Pacific Street, near Albany.
Pearl Street, corner Lake.
Pearl Street, corner Allston (post).
Pearl Street, corner Putnam Avenue.
Pearl Street, corner Decatur.
Pearl Street, corner Auburn.
Pleasant Street, corner Florence (post).
Pleasant Street, corner Upton.
Pleasant Street, corner Somerset.
Pleasant Street, corner Park.
Pleasant Street, corner Prince.
Pleasant Street, corner Pleasant Place (post).
Pleasant Street, corner Chestnut.
Pleasant Street, corner Franklin (post).
Portland Street, corner Main (post).
Putnam Avenue, opposite Ballard Place (post).
Putnam Avenue, near River Street (post).
Putnam Avenue, corner River Street (post).
Putnam Avenue, corner Walnut Court (post).
Putnam Avenue, corner Pleasant (post).
Putnam Avenue, between River and Pleasant Streets (post).
River Street, corner Franklin.
River Street, opposite Cottage.
River Street, opposite Laurel.
River Street, corner Blackstone.
River Street, opposite Fairmont.
School Street, corner Clark.
School Street, corner Portland (post).
School Street, corner Clark (post).
School Street, corner Moore (post).
Soden Street, corner Western Avenue.
Somerset Street, corner Andrew (post).
State Street, opposite Village (post).
State Street, near Howe's Factory (post).
Sydney Street, corner Allston.
Sydney Street, corner Putnam Avenue.
Sydney Street, corner Chestnut.
Sydney Street, corner State (post).
Sydney Street, corner Green (post).
Washington Street, corner Brewery (post).
Washington Street, corner Clark.
Washington Street, corner Portland (post).
Washington Street, corner Moore (post).
Waverley Street, opposite Willard's.
Western Avenue, corner Howard Street.
Western Avenue, corner Kinnaird Street.
Western Avenue, corner Jay Street.
William Street, between Magazine and River Streets (post).

Located in Ward Five.

Arlington Street, 500 feet from North Avenue (post).
Beech Street, east side, 20 feet from Orchard.
Belmont Street, corner Montgomery (post).
Cedar Street, corner Spruce.
Cedar Street, opposite Norris.
Cedar Street, opposite Hotel.
Coggswell Avenue, corner Mead Street.
Concord Avenue, corner Madison Street.
Concord Avenue, opposite Bond Street.
Concord Avenue, corner Walden Street.
Concord Avenue, opposite Eames's estate (post).
Crescent Street, corner Sacramento (post).
Donnell Street, corner Garden.
Dublin Street, 525 feet from Spruce.
Dublin Street, 620 feet from Walden.
Dublin Street, corner Walden.
Dublin Street, corner Sargent.
Dublin Street, corner Railroad.
Fairfield Street, opposite Mr. Whitney's.
Forest Street, corner Frost.
Garden Court, corner Dublin.
Garden Street, opposite Bond.
Harris Street, corner Forest (post).
Harvey Street, opposite Montgomery.
Hollis Street, in the elbow.
Hubbard Avenue, opposite brick block.
Hubbard Avenue, corner Raymond Street.
Lambert Avenue, corner Walnut Avenue (post).
Lambert Avenue, corner North Avenue (post).
Linnæan Street, corner Avon.
Linnæan Street, corner Bowdoin.
Linnæan Street, corner Raymond.
Milk Street, corner White.
Milk Street, near Somerville line (post).
Montgomery Street, 300 feet from Harvey (post).
Mt. Vernon Street, corner North Avenue (post).
North Avenue, near Railroad Bridge.
North Avenue, corner Coggswell Avenue.
North Avenue, corner Allen Street.
North Avenue, corner Dover Street.
North Avenue, 300 feet west of Tannery.
North Avenue, corner Sacramento Street.
North Avenue, opposite Linnæan Street.
North Avenue, corner Chester Street.
North Avenue, corner Arlington Street.
North Avenue, corner Rice Street.
North Avenue, corner Cedar Street.
North Avenue, opposite Tannery.
North Avenue, near Walcott Richardson's gate.
North Avenue, corner Beech.
North Avenue, corner Frank Street (post).
North Avenue, corner Day Street.
North Avenue, near Blake's blacksmith-shop (post).
Norton Street, midway.
Orchard Street, near Davenport (post).
Orchard Street, opposite Tenney Court.
Oxford Street, corner Forest.
Oxford Street, opposite Eustis Court.
Oxford Street, corner Sacramento.
Pemberton Street, 500 feet from North Avenue (post).
Pemberton Street, corner Fairfield (post).
Raymond Street, south side, near Mr. Dresser's estate (2).
Reed Street, 250 feet from Harvey.
Reed Street, opposite school-house.
Rice Street, opposite L. L. Cushing's.
Richdale Avenue, corner Raymond Street.
Richdale Ave., near Raymond Street (post).
Roseland Street, corner Frost.
Shepard Street, corner Avon.
Spruce Street, corner Hollis.
Spruce Street, corner Jackson (post)
Spruce Street, corner Reed.
Spruce Street, corner Montgomery.
Spruce Street, corner North Avenue.
Spruce Street, opposite school-house.
Spruce Street, corner Clay.
Spruce Street, corner Clifton.
Tannery Street (3), between North Avenue and Almshouse (posts).
Tuttle Street, opposite Ladd's barn.
Walden Street, corner Mead.
Walden Street, corner Hubbard Avenue.
Wallace Street, in the elbow.
Washington Avenue, corner Dexter.
Washington Avenue, corner Foxcroft St.
Wyeth Street, corner Garden.

RESERVOIRS.

Located in Ward One.

Bow Street, centre of square.
Brighton Street, corner Eliot.
Cambridge Street, corner Felton.
College Yard.
Garden Street, north end of Appian Way.
Junction Garden Street and Concord Avenue, opposite Arsenal.
Mt. Auburn Street, opposite the church.

Located in Ward Two.

Broadway, head of Tremont.
Cambridge Street, corner Webster Avenue.
Essex Street, corner Austin.
Harvard Street, opposite burial-ground.
Harvard Street, head of Cherry.
Harvard Street, corner Davis.
Harvard Street, corner Prospect.
Main Street, junction Broadway.
Norfolk Street, midway between Broadway and Hampshire.
Prospect Street, 175 feet north of Broadway.
Washington Street, corner Cherry.

Located in Ward Three.

Cambridge Street, 70 feet east of Third.
Gore Street, corner North Third.
Junction Bridge and Gore Streets.
New England Glass Company's Yard.
Otis Street, corner Fourth.
Thorndike Street, corner Third.
Under New England Glass Company's building.
Under Lowell R. R. Machine Shop.

Located in Ward Four.

Junction Western Avenue and Pleasant Street.
Lafayette Square (2).
Main Street, corner Austin.
Main Street, corner Brookline.
Main Street, junction Western Avenue and River Street.
Pearl Street, corner Franklin.
School Street, corner Cherry.
Washington Street, corner Pine.

Located in Ward Five.

North Avenue, near Engine House No. 4.

CAMBRIDGE FIRE-ALARM TELEGRAPH.

Location of Signal-Boxes.

2. Bridge Street, corner of Prison Point.
6. Third Street, corner of Broadway.
7. Third Street, corner of Bent.
8. Third Street, corner of Thorndike.
9. Cambridge Street, Beal & Hooper's Building.
12. Winter Street, corner of Third.
12. North Street, corner of Water (duplicate).
13. Fourth Street, No. 3 Engine House.
14. Sixth Street, corner of Cambridge.
15. Vine Street, corner of Fifth.
16. Broadway, Hancock & Greely's Building.
16. Potter Street, Rubber Factory Building (duplicate).
17. Washington Street, corner of Brewery.
21. Sidney Street, corner of Allston.
23. Pearl Street, corner of Auburn.
24. Brookline Street, corner of Valentine.
25. Main and Front Streets (junction).
26. Main Street, corner of Osborn.
27. Clark Street, corner of Harvard.
28. Broadway, opposite Page's Box-Factory.
29. Pine Street, corner of Washington.
31. Cambridge Street, corner of Harding.
32. Cambridge Street, corner of Columbia.
34. Columbia Street, corner of Hampshire.
35. Harvard Street, corner of Norfolk.
36. Main Street, corner of Western Avenue.
37. Pleasant Street, corner of River (junction).
38. Magazine Street, corner of Lake.
39. Magazine Street, corner of Chestnut.
41. Pleasant Street, corner of Fairmont.
42. Blackstone Street, opposite Riverside Press.
43. Banks Street, corner of Flagg.
45. Franklin Street, near Soden.
46. Main Street, corner of Hancock.
47. Broadway, corner of Antrim.
48. Cambridge Street, corner of Hampshire (junction).
49. Cambridge Street, corner of Baldwin.
51. Broadway, corner of Ellery.
52. Mt. Auburn and Main Streets (junction).
53. Bow Street, corner of Linden.
54. Cambridge Street, corner of Sumner.
57. Oxford Street, corner of Mellen.
59. Harvard Square, Ramsay's building.
61. Brattle Square, City Building.
62. Mt. Auburn Street, corner of Hilliard.
63. Brattle Street, cor. Mason (junction).
64. Garden Street, corner of Chauncy.
65. North Avenue, corner of Shepard.
68. North Avenue, near Railroad Bridge.
69. North Avenue, No. 4 Engine House.
71. North Avenue, near Tannery.
72. Cedar Street, Hotel Building.
73. Spruce Street, near Bay State Brick Yard.
74. Dublin Street, corner of Railroad.
75. Walden Street, corner of Raymond.
78. Concord Avenue, corner of Sparks.
79. Brattle Street, corner of Sparks.
82. Brattle St., corner of Elmwood Ave.
83. Mt. Auburn Street, near Belmont line.
91. North Avenue, Union Railway car-house.
92. Gore Street, J. P. Squire's Building.

Location of Bell-Strikers.

Unitarian Church, Harvard Square	Ward One.
Methodist Church, Harvard Street	Ward Two.
Putnam Schoolhouse, Fourth Street	Ward Three.
Webster Schoolhouse, Upton Street	Ward Four.
Baptist Church, North Avenue	Ward Five.

Instructions to Key-holders.

Alarms are to be given from the box nearest the location of the fire.

To give an alarm, open the door, pull the hook to the bottom of the slot once, and let go.

Each box contains a small bell, which, if heard before you pull, indicates that the alarm has been previously given. Any person listening at a box will learn the number of the box from which the alarm was given. For instance: If an alarm proceeds from Box 36, the bells and gongs attached will strike three, then, after a short pause, six consecutive blows, thus: III — IIIIII.

Don't give an alarm for a fire seen at a distance unless assistance is called for.

Citizens are earnestly requested to inform themselves where keys to the signal-boxes are kept; signs suitably inscribed are placed over each box, giving the requisite information.

Instructions to Firemen, &c.

Companies not required to respond to first or second alarms will be notified by two strokes on the gongs that their services WILL NOT be needed, and that orders have been given to "make up." Should an alarm be given from any box while a portion of the Department is engaged at a fire, the engine or ladder company located nearest to such box will immediately answer such alarm. Engine companies answering third alarms will also respond in the same manner as is described in the preceding sentence.

Police-officers and citizens who may give an alarm of fire are requested to remain at the signal-box until the arrival of an engine or ladder company, and then direct them to the locality of the fire.

REPORT

OF THE

SUPERINTENDENT OF STREETS.

CAMBRIDGE, Dec. 31, 1879.

To the Hon. City Council of the City of Cambridge:—

GENTLEMEN, — I herewith submit for your consideration a report of operations in, and matters relating to, the Street Department for the financial year ending Nov. 30, 1879.

The appropriation for the year, was: —

Street Department — repairs	$57,000.00	
Receipts from estimated revenue	265.13	
Transferred from surrendered estates	150.00	
	$57,415.13	
Transferred to Bridges	1,000.00	
		$56,415.13

Expended as follows: —

Gravel	$6,870.91	
Stone	11,658.30	
Labor with men and teams	27,045.41	
Tools and repairing	398.58	
Iron work and repairs on teams	802.21	
Hay and grain	3,087.03	
Horse-doctoring	82.00	
Horse-shoeing	569.42	
Lumber	270.31	
Sign-painting	35.00	
Horse	112.00	
Amounts carried forward	$50,931.17	$56,415.13

Amounts brought forward	$50,931.17	$56,415.13
Water	107.15	
Superintendent, salary	1,716.66	
Stable supplies	116.61	
Fuel	98.75	
Hardware	284.75	
Harnesses and repairing	241.59	
Gas	79.69	
Advertising	1.40	
Bricks	27.50	
Harbor Commissioners	53.40	
Repairing clock	1.50	
Sea-wall	2,048.00	
Freight	63.02	
Stone-cutting	15.00	
Mason work	4.33	
White-washing	30.00	
Painting fence on sea-wall, Main Street	50.00	
Damages, widening River Street	500.00	
		$56,370.52
Balance unexpended		$44.61

The streets of our city are in general good condition. Broadway from Third to Prospect Street, part of North Avenue, Waterhouse, and a part of Garden Street, will need macadamizing the coming year.

I think an appropriation of $70,000 will be needed for the care and repair of the streets for the coming year.

The following streets have been accepted: —

Nov. 4, 1879. Waverley Street, 40 feet wide, from Allston to Putnam Ave.
" " Talbot Street, 30 feet wide, from Waverly to B. & A. R.R.
" " Harris Street, 40 feet wide, from Frost to Oxford Street.

Appropriation for Paving		$7,000.00
Expended as follows: —		
Labor, with men and teams	$708.75	
Paving	3,127.07	
Bricks	444.00	
Advertising	1.80	
Paving stones	610.39	
Flagging stones	65.50	
Sand	167.13	
		$5,124.64
Balance unexpended		$1,875.36

There has been but little new work done in paving: most of the work has been general repairs, which will have to be continued the coming year.

I desire to call your attention to the matter of paving our principal thoroughfares, and would recommend that a certain sum be appropriated each year for that purpose. For the general repairs $8,000 will be needed for the coming year.

Appropriation for Bridges	$2,000.00	
Transferred from street appropriation	1,000.00	
		$3,000.00
Expended as follows: —		
Labor	$2,075.22	
Lumber	388.39	
Hardware	16.96	
Iron-work	53.66	
Caulking Sixth-Street Bridge	100.00	
Oil and gas fixtures	5.50	
		2,639.73
Balance unexpended		$360.27

The piling and timbers of our bridges are all in good condition. Third Street Bridge will need replanking. Western Avenue Bridge will need some repairs. Brookline Bridge will need replanking in part, and the North Avenue Bridge will also need replanking.

Sixth Street Bridge has been thoroughly repaired at an expenditure of $490.12.

I would recommend an appropriation of $3,000 as being needed for the care and repair of the Bridges for the coming year.

Appropriation for watering streets	$7,500.00	
Revenue	8,594.04	
	$16,094.04	
Transferred from surrendered estates	500.00	
		$16,594.04
Expended as follows: —		
Advertising	$1.83	
Carts, repairs of	282.16	
Superintendent, salary of (balance)	25.00	
Water for streets	5,561.47	
Hose	165.14	
Watering streets	9,270.77	
		15,306.37
Balance unexpended		$1,287.67

Schedule of Property belonging to Street Department.

Utensils for work on streets	$525.00
24 horses	5,800.00
7 double harnesses	325.00
3 wagon harnesses	85.00
14 chain harnesses	275.00
10 saddles	175.00
30 collars	100.00
17 carts	1,800.00
1 caravan	50.00
1 set runners	85.00
1 plough	5.00
Stable furniture and supplies	35.00
11 snow-ploughs	275.00
Stone-crusher and steam-engine	3,800.00
5 street rollers	1,300.00
6 sleds	435.00
1 wagon	50.00
17,500 bricks	175.00
1,344 yds. cracked stone	2,352.00
Stone for cracking	250.00
Railroad track on Cambridge Street	500.00
3 express wagons	250.00
Lot of round and square paving-stones	435.00
Lot of edge-stones and corners	85.00
22 watering-carts	9,000.00
	$28,167.00

Respectfully submitted,

B. W. WOODARD, *Supt. of Streets.*

REPORT

OF

THE CHIEF OF POLICE.

CAMBRIDGE, December, 1879.

To the Honorable Mayor and the City Council: —

I have the honor to submit to you my Annual Report for the year ending Nov. 30, 1879: —

Roster of the Department.

	Age.	Appointed.
Frederick W. Hagar, Chief of Police	49	Oct. 1863.
Timothy Ames, Captain of District One	57	Jan. 1859.
Warner W. Simonds, Captain of District Two	36	Jan. 1869.
John L. Boynton, Captain of District Three	59	June, 1860.
Mark J. Folsom, Capt. of Night Police.	43	Jan. 1871.
Resigned		Feb. 1874.
Reappointed		Jan. 1878.
Thomas D. Cook, Sergeant	58	June, 1853.
George H. Copeland, Sergeant	50	Jan. 1867.
Andrew Sproul, Sergeant	56	Jan. 1861.
Matthew R. Moore, Sergeant	54	March, 1867.
William Mullett, Sergeant	40	Oct. 1864.
William Twist, Sergeant	67	Jan. 1853.
Resigned		Oct. 1853.
Reappointed		May, 1857.
Charles B. Jones, Detective	35	Jan. 1873.

Patrolmen at Station One.

Edward F. Belcher	38	Jan. 1879.
Charles A. Brown	38	Jan. 1877.
Lothrop J. Cloyes	42	Jan. 1871.

	Age.	Appointed.
Timothy Corcoran	32	Jan. 1879.
Patrick Doyle	32	Jan. 1877.
William H. Evans, Jr.	31	March, 1874.
Alonzo S. Harriman	34	March, 1874.
Thomas H. Lucy	36	Jan. 1870.
Resigned		Oct. 1873.
Reappointed		June, 1875.
Hugh McNamee	46	March, 1874.
Frederick B. Pullen	34	Jan. 1871.
Leonard Shackford	53	March, 1867.
Andrew G. Smith	43	Sept. 1869.
Lewis A. Thurston	25	Oct. 1879.

Station Five, District One.

Daniel Callahan	34	Jan. 1873.
Albert D. Cleveland	56	Feb. 1865.
George A. Marston	58	Jan. 1866.
James Miller	44	Nov. 1873.
Thomas W. Penney	32	March, 1874.
Henry M. Tyler	46	Dec. 1873.

Station Two.

James S. Alexander	37	March, 1874.
Benjamin F. Bridden	57	Jan. 1855.
James S. Daily	44	March, 1874.
Michael A. Dalton	36	March, 1874.
Otis Dennison	42	Jan. 1873.
Charles S. Dixon	41	Jan. 1877.
Rufus S. Downe	44	March, 1870.
Lawrence J. Ducey	33	March, 1874.
George S. Dudley	43	Feb. 1865.
Resigned		Feb. 1874.
Reappointed		Jan. 1878.
Thomas S. Hall	44	Dec. 1873.
Luther Hapgood	54	Jan. 1873.
Benjamin F. Higgins	32	Jan. 1879.
Simon D. Hiscock	42	Jan. 1871.
William Nickelson	56	March, 1874.
James H. Parks	52	Feb. 1866.
David A. Stevens	36	Jan. 1879.
George Wood	48	Feb. 1865.
Charles W. Priest	32	Dec. 1879.

Station Three.

	Age.	Appointed.
William F. Batchelder	36	Jan. 1877.
Dennis Corcoran	38	Jan. 1870.
Warren A. Eaton	36	April, 1873.
William Hawkins	35	Jan. 1878.
Moses W. Hooper	56	Oct. 1866.
Amos Jones	39	Feb. 1869.
James E. Murray	35	May, 1870.
John F. Murray	33	Feb. 1873.
David N. McCleary	55	Aug. 1870.
Frank W. Scobey	26	Aug. 1877.
John W. Skelley	41	March, 1874.

Work done by the Police during the year ending Nov. 30, 1879: —

Arrests		1,264
Males	1,137	
Females	127	
Adults	860	
Minors	404	

Causes of Arrest.

Assault and battery	145
Assault on officers	13
Assault with intent to kill	2
Assault with a dangerous weapon	2
Assault mutual	18
Attempt to break and enter	2
Adultery	2
Breaking and entering	27
Bastardy	11
Bathing in public view	11
Common drunkard	10
Cruelty to animals	6
Capias	1
Common railer and brawler	2
Cruelty to children	2
Concealing mortgaged property	2
Carrying concealed weapons	1

Drunkenness	482
Disturbing the peace	21
Disturbing a public meeting	6
Delirium tremens	1
Embezzlement	9
Escaped prisoners	8
Wilful trespass	47
Evading car-fare	3
False pretences	4
Forcible entrance	2
Forgery	1
Interrupting a funeral	1
Insane	16
Larceny	107
Larceny from a building	5
Lewd and lascivious	6
Malicious mischief	40
Manslaughter	1
Malicious burning	2
Misdemeanor	3
Obscene printing	2
Perjury	1
Polygamy	1
Peddling without a license	5
Robbery	1
Receiving stolen property	2
Runaways	4
Safe-keeping	2
Stubborn children	9
Suspicion	21
Surety of the peace	27
Stealing a ride	1
Threatening to shoot and kill	1
Truancy	7
Vagrancy	27
Violation of city ordinances	97
Violation of liquor law	16
Violation of Sunday law	15
Violation of dog law	6

Miscellaneous Business.

Accidents reported	82
Dangerous buildings reported	10
Dangerous chimneys reported	4
Defective gas-pipes reported	9
Defective hydrants reported	15
Defective water-pipes reported	86
Dead bodies found	6
Disturbances suppressed	166
Details for extra duty	268
Defective streets and sidewalks reported	410
Fire alarms given	19
Fires extinguished without alarm	10
Intoxicated persons assisted	60
Lost children restored	169
Sick and injured persons assisted	42
Stray teams put up	35
Street obstructions made safe	107

Amount of property reported stolen in the city	$4,864.80
Amount of stolen property recovered in and out of the city	4,464.25

Number of lodgers		2,772
Males	2,650	
Females	122	
Adults	2,693	
Minors	79	
White	2,714	
Colored	58	

City Property in use by the Police Department.

	Estimated Value.
60 badges	$90.00
50 badges for special officers	62.50
60 billies	30.00
54 belts and billies for parade	54.00
16 buckets	8.00
2 book-cases	30.00
1 book-rack	2.00
4 bedsteads	16.00
Amount carried forward	$292.50

	Amount brought forward	$292.50
57	blankets	38.00
3	brushes	1.75
10	books	35.00
3	baths	5.00
1	Bible	1.00
4	brooms	.80
2	bureaus	3.00
1	boat and grapples	25.00
1	buggy	50.00
1	currycomb	.20
7	clocks	63.00
73	chairs	84.00
4	carpets	48.00
1	copying-machine	15.00
	Coverlet, sheets, and pillow	5.00
3	comforters	3.00
10	desks	131.00
1	droplight	1.00
2	dust-pans and brushes	1.00
2	horses	200.00
2	horse-blankets	2.00
12	pairs handcuffs	22.00
	Hose	18.00
1	hat rack	.50
6	inkstands	5.25
1	pair insect bellows	1.00
21	lanterns	21.00
4	lounges	40.00
1	letter scale	.75
2	lamps	1.00
10	mirrors	19.00
15	mattresses	31.00
3	mats	3.00
1	map	1.00
2	oil-cans	.50
10	pistols	15.00
1	pitchfork	.50
1	police wagon (new)	280.00
1	police wagon (old)	200.00
1	express wagon	75.00
	Amount carried forward	$1,739.75

	Amount brought forward	$1,739.75
1	pair runners	12.00
1	pistol case	1.00
3	pillows	1.50
	Ropes and stakes	150.00
1	rubber blanket	1.50
3	slates	.75
1	shovel	.50
8	spittoons	2.50
3	sofas	15.00
4	stretchers	8.00
1	safe	250.00
4	sheets	1.00
1	settee	2.00
1	stove	6.00
	Telegraph lines and machines	500.00
12	tin dippers	1.00
30	towels	3.25
6	tables	24.00
3	umbrella-stands	3.00
4	waste-baskets	2.00
2	water-coolers	3.00
4	water-pails	1.25
1	wagon-jack	3.00
1	wrench	1.00
1	wardrobe	10.00
1	pair knee boots	3.00
	Total estimated value	$2,746.00

Total cost of the department for the year: —

Appropriation and estimated revenue	$61,500.00

Expenditures.

For pay of Chief and Officers	$56,806.61
„ wreaths and buttons	61.50
„ telegrams, express and travelling expenses	106.31
„ supplies for prisoners	88.64
„ gas and regulator	877.92
„ fuel	589.16
Amount carried forward	$58,530.14

Amount brought forward	$58,530.14
For furniture and repairs	123.31
„ directories and law book	18.00
„ cleaning stations	108.85
„ ice	43.50
„ medical attendance	12.00
„ printing	20.00
„ repairs of telegraph	44.74
„ repairs at stations	196.84
„ matches and oil	17.10
„ water-rates	46.80
„ billies	11.90
„ damage by telegraph	10.00
„ bill posting	10.00
„ newspapers	20.00
„ painting boat	8.00
„ repairs of harnesses	22.10
„ hay and grain	206.82
„ horse-shoeing	29.34
„ saddle and bridle	17.00
„ repairs of wagons	72.05
„ new wagon	280.00
	$59,848.49
Amount paid into treasury on account of services of warrants, fees, extra duty of officers, etc.	3,334.11
Balance, showing actual cost	$56,514.38

The station-houses and lock-ups are all in excellent condition, and will need but slight repairs during the coming year. The discipline of the force is good and it has been my constant aim to perfect it. But few complaints against officers have been made, either by members of the department or citizens, and these have been promptly and fairly investigated. Of these, five cases only have been brought before the Committee on Police, and all but three have been dismissed unsustained. The officer detailed for detective service has not only been very successful in the detection of those concerned in crime, and the recovery of stolen property, but has rendered valuable assistance to the City Solicitor in several civil suits in which the city was largely interested. It has been my endeavor to enforce the statute law and the ordinances of the city in a faithful and impartial manner, and I have

had, with a few exceptions, the hearty co-operation of the several captains, sergeants, and patrolmen throughout the department. Good order has been maintained, a large percentage of the property reported stolen has been recovered, and in most cases the guilty parties have been brought to justice.

In order effectually to enforce the law regulating the sale of intoxicating liquors, the captain of each district was directed to require each officer under his immediate control to visit all licensed places within their several routes as often as once each week. The men were instructed to ascertain whether all the conditions prescribed in each license were complied with, to report all unlicensed places where there were reasons to suppose that the law was violated, together with any information that could be used as evidence against them, and to cause the law to be enforced to the utmost of their ability. In accordance with such instructions all suspicious places have been searched, and, where evidence of illegal sales has been obtained, prosecutions have followed. It is a matter for congratulation that while the advent of more prosperous times has put a considerable amount of money in circulation among the working population, there has been no increase in the crime of drunkenness, and that the number of arrests for that crime shows a slight decrease from that of last year.

I would respectfully renew the recommendation made in my former report, that two saddle-horses be purchased for police service in Districts One and Two. These districts contain an area of over 2,300 acres, extending three and one-half miles in one direction, and varying from three-fourths of a mile to one and a-half miles in another. They are patrolled by a day force of only seven men. The outer and sparsely settled portions are to some extent necessarily neglected, and during the winter season, with this small number of men, it is impossible to have these districts properly patrolled. During the past summer 182 houses in these localities were reported vacant for a part or the whole of the season, many of them being remote from the principal thoroughfares, and surrounded by gardens and orchards, where thieves and evil disposed persons could operate with but little chance of detection. In order more fully to protect these districts, in July last a mounted officer was detailed and placed on duty in those portions most exposed and liable to depredation, and the result was that more protection was rendered, and complaints were rare. If

two men were assigned to such duty, full protection, in my opinion, would be afforded.

The relations of our department with the Boston force, and with the police departments of neighboring cities and towns, have been of an exceedingly pleasant nature. From the Superintendent and other officers of Boston we have received valuable aid, and have in our turn rendered them assistance whenever requested.

In conclusion, I heartily thank His Honor the Mayor, and the gentlemen composing the Board of Aldermen for their uniform kindness and support, and also the members of the force for their prompt and cheerful obedience to orders.

Respectfully submitted,

FREDERICK W. HAGAR,
Chief of Police.

REPORT

OF

THE SUPERINTENDENT OF LAMPS.

To the Hon. City Council of the City of Cambridge: —

The undersigned respectfully submits his Annual Report of the department of lighting streets, for the year ending Nov. 30, 1879.

The amount appropriated for the current year was $19,500.00.

The amount expended is as follows: —

For Gas	$12,020.09
Care of lamps and lighting	5,165.70
Repairs	392.41
Labor, pipe, and fittings, Cambridge Gas Co.	83.26
Posts and lanterns	20.76
Kerosene	173.88
Matches	58.52
Alcohol	108.00
Chimneys	18.70
Burners	7.20
Carting	1.30
Painting posts and lanterns	137.53
Reflectors	175.00
Printing	10.93
Lamp-post cocks	7.56
Putty and gas tools	6.15
Sundries	10.30
Salary of Superintendent	358.32
Whole amount expended	$18,755.61

Cash collected from various parties, for damages on posts and lanterns, and paid into City Treasury	$30.61
Balance of appropriation unexpended	744.39
Leaving the net expenditures for the year	18,725.00
	$19,500.00

The cost for the maintenance of the department for the past year was $23.00 per lamp; a reduction of $6.00 per lamp from the cost of 1876, of $3.71 from 1877, and $0.88 from 1878.

The number of lamps in the city is as follows: —

	Gas.	Kerosene.	
District 1	161	1	
2	145	20	
3	148	13	
4	155	8	
5	132	31	
	741	73	
Total			814

Nine of the above have been added since my last annual report, and were all paid for by the petitioners for the location.

Three hundred and thirty-three lamps on the main streets of the city have been kept burning all night on 188 nights of the past year, averaging $10\frac{3}{4}$ hours per night; the lighting of the remaining 481 lamps on the cross streets and in other localities has been regulated by the rising of the moon; none, however, having been left burning after 12 o'clock at night.

In this connection I would again call the attention of the City Council to the darkness of the cross streets after 12 o'clock at night, and to my last two annual reports for further information on this subject. The general complaint of the darkness of the cross streets, and the desire expressed by many of the leading citizens and tax-payers, that the lamps throughout the entire city should all be extinguished at the same hour, leads me to renew the recommendation in the reports referred to, in reference to the lamps on the cross streets. The advantages of a well-lighted city, in respect both to safety and ornament, are so manifest that the change suggested, I believe, will meet with general approval.

During the past year, by order of the Committee on Lamps, various experiments have been tried, with a view of reducing the expenses of the department. In the month of May the Globe Gas-Light Co. were given permission to place eight of their lights on the Common in Ward One, and eleven on Main Street in Ward Four. The experiment was thoroughly tried and no satisfactory result obtained. In the month of July, fourteen of Robinson's patent street-lamp reflectors were placed in the lanterns on Main Street from Pleasant Street to the junction of Mount Auburn and Main Streets, and the burners reduced from four to three feet per hour. The prominent location of these reflectors on one of the main thoroughfares of the city, it was thought, would give the citizens an opportunity of viewing them to advantage and of expressing an opinion as to their utility.

From time to time additional reflectors have been put up in other parts of the city, amounting in all to one hundred, and the general expression of the citizens is favorable to their use. The inventor claims that the light obtained with a three-foot burner and the reflector is equal to a six-foot burner without the reflector. The city of Boston have reduced their street burners to three feet per hour, and are now trying some of these reflectors in their street lanterns with a view of testing their utility.

The street lamps of Boston are about 150 feet apart in the thickly-settled districts, and about 180 feet apart in other portions of the city. In Cambridge, the street lamps average 200 feet apart, and the object in view, by the use of these reflectors, is to obtain more light at a less expense than heretofore. The gas supplied to the city for the street lamps at the present rates costs more than $12,000 a year. If this reflector is adopted for all the street gas-lamps, and the burners reduced to three feet per hour, it will be a saving to the city, in the amount of gas consumed, of twenty-five per cent. With these remarks I leave the matter in the hands of the City Council for their judgment and decision. The average cost of burning gas was $5\frac{4}{5}$ cents per night for each lamp; for each lamp burning kerosene, one cent per night.

The city is laid out into five lighting districts, and ten men are employed, two in each district, to light and take care of the lamps. The duty of these men is to light and put out the lamps promptly at the time designated, to clean the lanterns and reflectors once in each week and oftener if necessary, keep the

fixtures cleaned and oiled, report leaks, keep the burners in order, set all glass, keep the pipes clear from water and frost, and make a statement in writing on each Monday morning to the Gas Company of the number of lamps and the hours of burning on each route for the week previous.

The estimated value of the property of the department is $14,538.46.

Respectfully submitted,

BENJ. F. NOURSE,

Superintendent of Lamps.

REPORT

OF THE

SEALER OF WEIGHTS AND MEASURES.

To his Honor the Mayor, and the Board of Aldermen of the City of Cambridge: —

GENTLEMEN, — In the performance of my duties I have visited during the year 436 places of business, and have sealed and adjusted the scales, weights, and measures found therein. The city scales throughout the city have also been tried, adjusted, and proved; and the fees collected, amounting to $363.73, have been paid into the City Treasury. Considerable work in sealing and adjusting has been done at the office, for which no fee has been charged.

State Property in Possession of the Sealer.

One balance.
One set avoirdupois weights.
One set dry measures.
One set liquid measures.
One brass yardstick.

City Property in Possession of the Sealer.

One ton of iron weights.
One trip scale and box.
One set brass weights in box.
Four iron weights: one 25, two 10, and one 5 pounds.
Lot of stamps and tools for adjusting and sealing.

B. F. NOURSE,
Sealer of Weights and Measures.

CAMBRIDGE, December 18, 1879.

REPORT

OF THE

INSPECTOR OF MILK.

To the Board of Mayor and Aldermen: —

GENTLEMEN, — I herewith present my Third Annual Report.

Milk has until within a month or so been abundant and of good quality, and I have heard but little complaint in regard to it.

The most serious trouble that we have with the milk delivered in the city of Cambridge is its age. If the milk comes on the cars from New Hampshire or the northern part of the State, it may be milk which was drawn last evening and this morning, and was delivered to the milk-car this morning. It is then brought to East Cambridge, arriving there at from nine to eleven o'clock, and is immediately delivered to the milkman, who carries it to his stable and keeps it until the next morning, when it is delivered to his customers. Now the freshest of this milk is twenty-four hours old when it is delivered, and part of it is thirty-six hours old. I have reason to think that part of the milk delivered is even older than this, or, in other words, is thirty-six and forty-eight hours old.

Milk is a delicate substance, prone to change with atmospheric disturbances and with age, so that this two-day-old milk is by no means the same fluid that was drawn from the cows. While fresh milk is the most healthy of all foods for children, it does not follow that stale milk is equally good. The chemist unfortunately is without means of telling whether milk is fresh or stale, and we cannot guard against this state of affairs. Another cause of poor milk is the practice that is common among the milkmen

during the winter season, of leaving the Sunday supply on Saturday morning. Of course, to be able to leave two days' supply at one time, he must accumulate the milk during the week, or he must hold back continually a day's supply, so that this course results in the delivery of older milk than should be delivered.

This delivery of old milk necessitates some means of preserving the milk in warm weather. This is generally done in ice chests, but, in spite of this precaution, milk will still turn sour.

So the milkman has recourse to various preserving powders for the purpose of preventing this souring. One of the best and least harmful is composed about as follows: —

Baking soda	1 pound.
Salt	1 pound.
Sugar	1 pound.

These are all reduced to a fine powder, and about a teaspoonful is added to each can. This prevents the thickening of the milk by absorbing the lactic acid as quickly as it is formed.

Within a few months a new coloring matter has been introduced into the milk trade, to take the place of the burnt sugar that has been so long used. This is known as Richardson's Perfected Butter Coloring. It consists essentially of a potash solution of annatto.

People are not satisfied with a pure milk: they want one on which the cream rises promptly, and which looks rich even after the cream has been taken off, and the milkman finds it to his advantage to supply such milk. He finds that if he takes a very rich milk, removes a little of the cream, then adds a little water, — say about the same amount as the cream removed, — then colors the milk with burnt sugar or annatto, that the article is much more satisfactory to the average customer than genuine milk; and he also knows from experience that he can do this trick as long as he wishes, without interference from any inspector.

Milk that is watered throws up its cream in about quarter the time that genuine milk does, and this cream, when first thrown up, appears more abundant than the cream on the genuine article. In an experiment tried some years ago, a sample of milk was mixed with its own bulk of water. The cream on this watered milk, at the end of two hours, showed ten per cent, while the cream on a sample of the genuine milk standing beside it showed

but five per cent. Next morning, however, these figures were reversed; the watered milk showing five per cent, while the genuine showed ten.

A large amount of skimmed milk is sold in the city as genuine milk, but there seems to be no method of reaching this case; and as it is generally sold by the stores at one or two cents below the regular price of that delivered by the milkman, the main harm done is the competition with the regular trade. Good skimmed milk at five cents per quart is cheap food.

I have made, during the year, analyses of five samples of milk, which will serve to indicate to some extent the character of the milk supplied to the city. The first four came from the cars in East Cambridge, and were taken at random from the stock on hand. The fifth was from a herd in Waltham, and was milked in my presence.

Samples taken from Cars.	1	2	3	4	5
Cream	11.00	10.00	12.00	8.00	8.50
Specific Gravity	1.030	1.032	1.030	1.028	1.034
Sugar	4.90	4.90	4.35	4.32	4.00
Caseine	3.73	4.48	4.11	4.31	5.12
Ash	.65	.70	.71	.59	.66
Solids not fat	9.28	10.08	9.17	9.22	9.78
Fat	3.83	4.86	3.39	3.49	3.60
Total solids	13.11	14.94	12.56	12.71	13.38
Water	86.89	85.06	87.44	87.29	86.62
	100.00	100.00	100.00	100.00	100.00

The skim milk from the sample from Waltham gave, —

Solids not fat	9.76
Fat	1.06
Total solids	10.82
Water	89.18
	100.00

Within a year or two quite a lively trade has sprung up in Cambridge, in milk purporting to be raised in the city and delivered fresh morning and evening; some men asking a cent per

quart more than the regular price, others selling at the regular price. The milk furnished by these men, so far as I know, has been of good quality, with one or two exceptions. One case has come to my knowledge in which there was considerable complaint in regard to dirt in the milk. The price of milk during the summer has been six cents per quart delivered at the house, or four or five cents at the store ; but it has, since winter set in, been generally raised to seven cents delivered.

In closing this report, which is probably the last that I shall have the honor of submitting to you, — the pressure of other business preventing my again becoming a candidate for office, — I wish to thank the milkmen and all connected with the trade for the uniform courtesy with which they have treated me, and for the facilities that they have given me for becoming fully acquainted with the trade.

Property of the City in Possession of the Inspector.

One silver badge, one lactometer, and the necessary books and blanks for registration.

S. P. SHARPLES,
Inspector of Milk for the City of Cambridge.

REPORT

OF

THE CITY ENGINEER.

City of Cambridge,
Office of the City Engineer, Dec. 17, 1879.

To the Honorable the City Council: —

Gentlemen, — A report of the operations and expenses of the Engineering Department, for the year ending Nov. 30, 1879, is herewith presented, as required by Sect. 8 of the City Ordinance relating to City Engineering.

Streets.

Waverley Street, between Putnam Avenue and Talbot Street; Talbot Street, between Waverley Street and the Boston and Albany Railroad; and Harris Street, from Frost Street to Oxford Street, have been accepted on the usual conditions.

Improvements have been made on Main Street, between the Boston and Albany Railroad and the City Wharf, as follows: The old retaining wall, making the southerly side of Main Street between the points previously mentioned, has been put in thorough repair by supporting the part under Ward's Carriage factory, by a slope ballast wall, built up against and in front of the existing wall, which in places was from 18 to 24 inches out of plumb, and in immediate danger of falling. The old wall was constructed without ballast, the earth under the sidewalk was constantly washing out by the action of the water, and holes in the sidewalk were of frequent occurrence. This was remedied by the removal of the earth from the rear of the wall and refilling with oyster-shell ballast, and a top-dressing of earth and gravel. New fender piles were driven and capped with $12'' \times 12''$

hard pine caps, on which was erected a fence of white pine and neatly painted. The whole work which renders the walk and Street now safe, is a great improvement to the general appearance. There now exists a neat and sightly fence, in place of one unsightly as well as unsafe. The whole work was performed under a contract with Mr. Isaac A. Sylvester, and cost, exclusive of regrading done by the Street Department, $2,098.

Bridges.

West Boston, Craigie's, and Prison Point bridges are, so far as known, in good condition. No extensive repairs or alterations have been required on any of the other bridges maintained in whole or in part by the city, and all are believed to be in good condition. No extensive repairs will be needed the coming year, the matter of planking portions of the Third Street, Brookline, and North Avenue bridges being all that seems now to be necessary beyond the ordinary cost of maintenance.

Sewers.

Sewers have been constructed in Putnam Avenue, Garden Street, Waverley Street, Talbot Street, and private lands and Dover Street, the only one of any magnitude being through Waverley Street, Talbot Street, and private lands. This forms an outlet for a new drainage district, which embraces all the territory lying east of Brookline Street, south of Erie Street, extending to Charles River, and by Charles River to Brookline Street, and contains about 66 acres. The sewer is built in part of wood, and in part of brick, extending from the river westerly through private land of W. E. and Effie L. Coffin, to and across the location of the Boston and Albany R. R.; thence in Talbot Street to Waverley Street, and in Waverley Street to near Putnam Avenue. It was built in consequence of a petition presented by John Reardon & Sons, and for their immediate use, but was designed for and will ultimately receive the drainage from the before-described district, embracing some 12,000 feet in length of sewers of varying sizes to suit the requirements of the streets in which laid. The contract for building this sewer was awarded to Dennis O'Connell, but as he failed to comply with its terms, the contract was cancelled and the work finished by the city, by the day.

More failures have occurred in the cement-pipe drains. The sewer in Franklin Street (a twelve-inch pipe) was very much disintegrated, and another portion of the eighteen-inch pipe in Walden Street. The Franklin Street sewer was relaid with Akron pipe, and that in Walden Street with brick. A serious break has occurred in that portion of the Jay Street sewer which crosses the marsh. It is built upon piles, which show no appearance of settling; but a failure to support the haunches has allowed the sewer (a brick one, 32″ × 36″) to spread and flatten out; and in places the arch has fallen in. As the same conditions exist all through the marsh, and at points where examined the sewer seems to be spread and flattened to a considerable extent, it is quite probable that most, or possibly the whole, of the portion extending through the soft ground will have to be rebuilt. As the break occurred after the ground was frozen, no attempt has been made except to repair it temporarily, and the street has been closed to travel until the spring opens.

The contract for constructing catch-basins was awarded to Mr. Samuel McCulloch at $48.94, and expires June 1, 1880; the old contract, which expired June 1, 1879 was $42.50. There have been built under these contracts nine catch-basins. The contract for cleaning catch-basins was awarded to Mr. Cornelius O'Connor for the sum of $1,174. There has been paid to him the balance on the old contract, $400; on account of the new, $600; making the total cost of cleaning, to Nov. 30, 1879, the sum of $1.000.

There have been licensed as drain-layers by the Committee on Sewers and Drains twenty-seven persons, located in the different wards, as follows: Ward One, 6; Ward Two, 10; Ward Three, 4; Ward Four, 6; Ward Five, 1. To these parties 178 permits have been issued for entries into the public sewers as provided by the ordinance relating thereto. The additional length of sewers constructed is 2088.4 feet, making the total length of sewers in the city, 61.667 miles. The following table will show the details of sewers constructed in 1879: —

Sewers Constructed from December 1, 1878, to December 1, 1879.

LOCATION.			CONSTRUCTION.						
Street.	From	To	Contractor.	Material.	Size in Inches.	Manholes.	Inlets.	Length in Feet.	Total Cost.
Putnam Ave. . .	Near Franklin St. .	Near Kinnaird St. .	Timothy Murphy . . .	Akron Pipe . . .	10″	. . .	7	91.7	$56.85
Garden St. . . .	Wyeth St. . . .	South-easterly . .	Matthew Corkery . . .	Portland Pipe . .	10″	. . .	15	200.5	124.05
Waverley St . .	Putnam Ave. . .	Charles River St. .	Dennis O'Connell . .	Brick and Wood .	16×22	3	. .	. . .	. . . .
Talbot St. . .			and . .	,, ,, ,,	24×30	2 Gate-chambers.	. .	. . .	. . . .
Private lands .			City Engineer . .	,, ,, ,,	40×42	. . .	24	1,382.9	3,762.23
Dover St.	North Ave. . . .	Somerville line. .	Samuel McCulloch . .	Portland Pipe . .	12″	1	19	413.3	243.72
						6	65	2088.4	$4,186.85

The appropriations were : —

For sewers (construction)		$7,000.00
Expended for sewers constructed, catch-basins, assessments refunded, &c.		4,968.07
Balance not expended		$2,031.93
For sewers (maintenance)		$6,000.00
Expended for cleaning catch-basins	$1,000.00	
For care and repairs	1,842.59	
		2,842.59
Balance not expended		$3,157.41

Complaints were made by some of the residents on Essex Street, that the sewer in that street had settled and was in bad condition. An examination was made by opening the sewer in several places, which showed that the complaints were entirely without foundation, as the sewer was found to be in excellent condition, clean, with no settling whatever, the trouble probably being in imperfect house-connections and no protection from backwater in storms. A manhole and new junction was built at Austin Street, which will give a better discharge into the Austin Street sewer. A complaint was preferred by the Board of Health of Somerville, alleging a nuisance at the tide-gates at Alewife Brook on Broadway in that city, and partially to remedy the difficulty, a floating boom was erected across the brook, on the city property, to intercept the floating matter, which has been removed under the direction of the Warden of the Almshouse and placed upon the city farm. This has been a partial relief, though a portion of the matter is, by the force of the current, drawn under and has been removed at the gates.

A substantial bulkhead has been built at the end of the Binney Street sewer to hold the stone ballast and keep it from falling around the outlet, and obstructing the discharge of sewage.

During the year a new sewer ordinance has been prepared by Alderman Whitney of the Sewer Committee, which met its approval; it has been passed by the City Government, and, if properly enforced, will cause the estates benefited to pay a proper proportion of the cost of the sewer itself, as well as a proportional part of the outlet sewers through which it discharges. The report relating to this ordinance, which was submitted in print, is one of

marked ability, and contains an amount of information relating to the laws and details of sewers and assessments which is of great value to the city. The report is hereto appended, and is well worthy of a careful perusal. The assessments upon sewers constructed this year have been laid upon the new plan, and seem to be reasonable and fair.

Nothing has yet been done to relieve the Ash-Street outlet, or the district south of North Avenue and near Coggswell Avenue, alluded to in my last report. Petitions have been presented for sewers in the latter case: they have been referred to the government of 1880, and should receive early attention. Petitions have also been presented for better drainage in Thorndike Street.

Water Works.

The action of the frost on the reservoir last winter was very severe, and the coping-stones making the inner lining of the reservoirs were badly thrown out of line, and extensive cracks appeared in the surrounding earth-banks, causing serious leakage. For several months the reservoir could not be filled to within about two feet of high-water mark. In order to remedy this effect of the action of the frost, the earth was removed from the back of the coping-stones and the inner lining of the reservoir to a depth of from 4 to $5\frac{1}{2}$ feet, with a width of 3 feet at the bottom, and generally reaching a hard or solid foundation; the excavation was then filled with concrete of the full width, to a height of about 2 feet, and then sloped up to near the top of the upper coping-stone. All the cracks in the old masonry were filled with cement before the concrete was put in, and the sloping outside of the concrete was carefully trowelled down, and made smooth; the supposition being that when the earth-bank freezes, instead of throwing the wall, it will slide up on the surface of the concrete backing. A concrete floor has been put into the coal-shed and a slide table for the transfer of the coal-car from one track to another, thus doing away with the old curves and switches. A new copper covering has been put upon the chimney. A new gate has been placed in the Wellington Brook gate-house, so that water may be drawn from the brook without connection with that part of the conduit northerly. Weirs have been constructed at Cushing Street, Richardson's Pond culvert, and at Frost Brook; and gauges set at Concord Avenue and Spruce Street in Alewife

Brook. Daily measurements of water flowing into Fresh and Little ponds have been made at these points since their erection, and elevations of the water taken on the meadows. Some account of these measurements and records, with diagrams, will be found in the report of the Water Supply Committee. All the beforementioned improvements have been carried out under the supervision of the Superintendent of the Works in his usual thorough manner.

Surveys have been made of the lands purchased of Josiah Coolidge and Jacob Hittinger, and the boundaries, as well as those of the engine-house lot and Tudor Park, have been marked by stone bounds at the corners so far as possible. The land given to the city by the Tudor heirs for a park, has been put in order in accordance with the provisions of the agreement, and is quite an improvement to the border of the pond. Surveys have been made and a large map prepared, showing Fresh Pond, Little, and Spy ponds, the intervening meadows, and Alewife Brook to Mystic River, and the territory proposed to be annexed from Belmont and Arlington. A reduced copy of a portion of this map will be issued with the report of the Committee. Numerous gaugings have been made of the flow of water from the conduit, and records taken of the height of the water in the wells sunk on the borders of the ponds, to show the relation of the ground-water as compared with that in Fresh Pond.

A large amount of work has been required from the engineering department in connection with the Water Supply Committee, in surveys and levels, and in giving information, with the experts employed in this matter. Instrumental surveys were made of some portions of the drainage areas of Fresh and Bird's ponds, as well as determinations by perambulations and existing maps of Wellington Brook, Spy, and Little ponds. These results show that the present areas are much smaller than have been previously given. Considerable areas which formerly drained into the ponds have been cut off by the construction of roads and sewers. Borings were made on the meadows and the shores of Fresh Pond, and the results show conclusively that Fresh pond receives a large portion of its supply from underground sources. This matter, as well as others relating to our water supply, is fully noticed in the report of the Water Supply Committee, to which, for additional information, reference is made.

In September, experiments were made on the conduit, and an examination of that portion lying between Fresh Pond and Wellington Brook, — the result showing it to be in excellent condition. All the water pumped was passed through a small pond dammed off for the purpose, and thence over a weir; measurements were taken every fifteen minutes during the whole time: after continuous pumping for 5½ days, the measurements showed that over 6,000,000 gallons had been pumped. It is probable that this quantity is somewhat in excess of the true amount, as for the first day or two there was a considerable leakage around the gate from the pond; this was finally stopped and the quantity is thought to be not far from a million gallons daily. After the pumping had ceased, the gate at Fresh Pond was again opened; but no flow was perceptible until after there had been rains, which would seem to indicate that the springs supplying the conduit were for the time exhausted. A hearing before the State Board of Health was had in December last (the proceedings of which are in print) in relation to the Niles Bros.' slaughter-house, on which case no decision has been given; but the works are now conducted under the supervision of that Board.

Public Property.

Surveys have been made, and plans drawn, of all the property belonging to the city, and, as mentioned in my last report, many encroachments have been determined, a matter of interest to the city.

In connection with the Shepard School an outbuilding has been erected for sanitary purposes, containing a system of sluice vaults and a slate and marble urinal. The building is light and well ventilated, in part heated by steam, and is a noticeable improvement over the old arrangement.

The drainage of Engine-house No. 5, at Inman Square, has been thoroughly renovated and extended, a system of blind drains put in the cellar, the manure-pit drained, and a marked improvement made. Previous to the work, at every rain, an amount of water and filth was taken into the basement which was truly sickening, but it is now dry and not affected by rains.

An examination of the rights of the city in the town landing at the foot of Bath Street has been made, showing that the city does not own any land there, but still has a right of way to the water through Bath Street or Lane.

Cemetery.

The usual amount of work has been done at the cemetery, consisting of staking out lots, laying out the grounds, and giving levels for grading the same. The remaining available grounds for burial purposes are very small, and an additional purchase of land should soon be made.

Office.

Work has been continued on the sectional maps alluded to in my last report, but there has not been so much progress made as was expected, owing to the other demands upon the force employed. Progress has been made upon all the maps, and several have been completed.

In May, Mr. Ira E. Clark, for a number of years connected with this office, was taken with violent hæmorrhages, and, finding recovery here apparently an impossibility, in July resigned his position and has sought restoration of health in Southern California. He was a valuable assistant and a loss to the department. Those below him have been advanced, and a new assistant taken into the office. Plans and specifications of all new structures have been prepared, and superintendence furnished when necessary. Twenty-five stone bounds have been set, marking street lines and public property. For most of the time five assistants have been employed.

The appropriation was	$6,500.00
The expenditure for salary of City Engineer, pay of assistants, horse hire, car fare, draughting materials, hardware, stone monuments, setting same, and other miscellaneous expenses, amounted to	5,868.59
Leaving an unexpended balance of	$631.41

Respectfully submitted,

W. S. BARBOUR.

REPORT

OF THE

STANDING COMMITTEE ON SEWERS AND DRAINS IN RELATION TO SEWER ASSESSMENTS.

In Board of Aldermen, Sept. 3, 1879.

The committee instructed by vote of Feb. 5, 1879, submits the following

REPORT.

"In Board of Aldermen, Feb. 5, 1879. *Ordered*, that the Standing Committee on Sewers and Drains be instructed to consider the principle upon which estates have been assessed for the construction of drains and common sewers in this city, also the practice of other cities and of towns in relation to the subject, and to report such facts and recommendations as shall enable this Board to fix a uniform and permanent rate of assessment; and that they may report by ordinance, resolution, or otherwise."

I. HISTORY.

The city of Cambridge is one of the few cities in the commonwealth which has never sought for or acted under a special law (the City Charter excepted) in constructing its ordinary street drains and providing for their assessment.[1]

The city of Boston acted under the general authority given to cities to "make needful by-laws," and passed ordinances providing for the assessment of the expense for building sewers upon such of its citizens as are benefited.

The court has held that such authority existed, and that such ordinance were valid if "reasonable and just." In 1840, the court decided that a certain ordinance of the city of Boston,

[1] The special Act of 1859, ch. 137, having no reference to street drains or to the assessment for any.

providing for assessments for constructing sewers, was neither reasonable nor just. Apparently in consequence of this decision, Chap. 115 of the Laws of 1841 was enacted. The provisions of this act are found in our General Statutes, Chap. 48, Sects. 3–7, and remained the general law of the State until 1869. The statute of 1841 was regularly accepted by the legal voters of Cambridge, Oct. 10, 1844, and five sewers were constructed under it. It was in force in Cambridge until the city charter was adopted.[1]

The following are some of the sections of Chap. 48 of the General Statutes: —

"Sect. 4. Every person who enters his particular drain into such main drain or common sewer, or who, by more remote means, receives benefit thereby for draining his cellar or land, shall pay to the city or town a proportional part of the charge of making and repairing the same, to be ascertained, assessed, and certified, by the mayor and aldermen or selectmen, and notice thereof shall be given to the party to be charged, or his tenant or lessee.

"Sect. 5. Assessments so made shall constitute a lien upon the real estate assessed for one year after they are laid, and may, together with incidental costs and expenses, be levied by sale thereof if the assessment is not paid within three months after a written demand for payment, made either upon the person assessed or upon any person occupying the estate; such sale to be conducted in like manner as sales for non-payment of taxes."

Sect. 6 provides for indemnification for injury sustained.

"Sect. 7. Nothing herein contained shall prevent a city or town from providing, by ordinance or otherwise, that a part of the expense of constructing, maintaining, and repairing main drains or common sewers, shall be paid by such city or town. And in the city of Boston, not less than one quarter part of such expense shall be paid by the city, and shall not be charged upon those using the main drains or common sewers."

These sections have formed a part of the general laws since their enactment, which was before any sewers were built by the authorities of the town or city of Cambridge. Their provisions were continued by Chap. 111, Laws of 1869, and remained in force unchanged until 1878, when an amendment was passed to Sect. 4, conferring additional powers.

The City Charter was adopted March 30, 1846, and contains the following provisions: —

[1] See opinion of Horatio G. Parker, City Solicitor, Feb. 19, 1873, in print.

"SECT. 11. The executive powers of the city and the administration of police, with all the powers heretofore vested by law in the selectmen of Cambridge, shall be vested in the mayor and aldermen, as fully as if the same were herein specifically enumerated.

"Sect. 19. The City Council shall have the power to construct drains and common sewers through any highways, streets, or private lands, paying the owners such damage as they shall sustain thereby; and to require all persons to pay a reasonable sum for the right to open any drain into such public drain or common sewer."

A special law was passed in 1859, giving power to the City Council to construct sewers through private lands before making terms with the owners for damage suffered.

Under the laws the authorities proceeded for the first twenty-three years, and many sewers were built. They were generally of the smaller sizes and had their outlets in the creeks and low lands most easily and cheaply reached.

The Common Council exercised their privilege of concurrent action upon the questions of constructing these sewers for the twenty years subsequent to 1850, and by ordinance concurred in providing for their assessment. (Chap. 23, Revised Ordinances, first passed in 1852.)

In 1869 there were such pressing needs for enlarged and more serviceable outlets for the North Avenue and Oxford Street systems, that the authorities entered upon large expenditure for sewer construction.

"The operations of the City Council of 1870," says Mayor Harding in his inaugural address, "in relation to sewerage, were of unparalleled magnitude." The total expenditure for that year was "nearly as great as the whole amount expended on sewers from 1846 to the close of 1868," a period of twenty-four years.

A change was made in the statute law at this time, and Chap. 111, Laws of 1869, was enacted. Though this change affected the nature of the powers conferred but little or not at all, leaving the law substantially as herein before quoted, yet considerable difficulty arose in determining the question upon whom the power to build sewers and assess their cost rested, the statute of 1869 naming the mayor and aldermen, and the City Charter naming the City Council. The controversy, finally decided in favor of the Statute of 1869 by the Supreme Court,

has no particular bearing upon the questions referred to your committee, except that provisions are made in the Statute of 1869 and Chap. 48, General Statutes, in relation to assessments, different from those of the City Charter.

Attention is called to the provisions of the general law for assessing every person who enters, or who by more remote means receives benefit, and the provisions of Sect. 19, City Charter, by which persons are required to pay a reasonable sum for the right to enter.

The facts of this controversy are briefly stated here to aid in the consideration of their bearing upon the inquiry concerning "the principle upon which estates have been assessed for the construction of drains and common sewers in this city."

1869.

In 1869 the construction and care of sewers were transferred from the Superintendent of Streets to the City Engineer.

In March, 1869, after the City Council had, for thirteen months, been considering the diverting of the drainage of the section of the city along the Somerville line, from Miller's River to Charles River, an order was passed to construct, at a cost not to exceed $45,000, a sewer from Charles River through Charles River and Chestnut Streets, the College grounds and Oxford Street, to Sacramento Street.

The total cost of this sewer and its branches built at that time was $74,662.93.

1870.

December, 1870, an assessment was proposed upon persons benefited, aggregating $48,985.89.

The North Avenue sewer and its branches cost $38,691.10, and the assessments proposed were $19,368.37.

1871.

May 9, 1871. Opinion of Judges Hoar and Curtis relating to assessment for sewers.

In 1871 assessments on North Avenue, Oxford Street, and in other localities, were resisted.

1872.

March 12, 1872. Historical Report of J. G. Chase, City Engineer, on the Oxford Street district drainage, was ordered

to be printed with Geo. W. Park's statement on assessment for sewers.

In 1872, the City Clerk prepared a table showing from city records the length, cost, and amount assessed of sewers.

May, 1872, an ordinance providing that sewers be constructed wholly at the public expense was, after being discussed several months, indefinitely postponed.

1873.

In 1873, Mayor Bradford, in his inaugural address, favors the abandonment of the assessment system and the adoption of the plan of charging for right to enter.

About Jan. 1, 1873, petitions for writs of certiorari upon the proceedings of the city, relating to North Avenue and Oxford Street sewers, were presented to the Supreme Court.

Feb. 19, 1873. Opinion of Horatio G. Parker, City Solicitor, (in print), on joint order in relation to authority of Common Council to build sewers, in which he asserts that the only authority possessed by the City Council or either board thereof to assess for sewer construction is that in Sect. 19 of the City Charter.

April 17, 1873. Opinion of Judge Hoar, on same subjects as were discussed by City Solicitor Parker.

July 16, 1873. Opinion of J. W. Hammond, City Solicitor, on legality of certain proposed amendments to Chap. 23, Revised Ordinances, relating to the authority of Common Council in sewer assessments.

Sept. 10, 1873. Amendment to Sects. 1, 3, and 7, of Chap. 23, Revised Ordinances, was adopted. This amendment put in force what has been called the "fifty-cent rule."

Dec. 10, 1873. Order of City Council to settle all outstanding claims for sewer assessment, and to refund to many who had already paid, according to the "fifty-cent rule."

1874.

February, 1874. Decision of Supreme Court in Woodbridge *v.* Board of Mayor and Aldermen of the city of Cambridge.

June 23, 1874. Order of Common Council, reciting that by "a recent decision of the Supreme Court, as interpreted by the City Solicitor, the Common Council has no jurisdiction in the matter of making, laying, or maintaining main drains or com-

mon sewers, nor in the matter of assessments therefor," also returning to Board of Aldermen certain papers (petitions, orders for abatement, and orders for construction of cesspools).

June 23, 1874. Joint order, discontinuing the Joint Standing Committee on Sewers and Drains.

1875.

January, 1875. Mayor Bradford states in his inaugural address, that " the sewer ordinance of 1873 is recognized to have no binding effect upon the Board (of Aldermen), and to have entirely lost its force " ; that the Board of 1874 had, however, in their assessments conformed to the ordinance, and his Honor recommended the same course on sewers awaiting assessment.

May 26, 1875. Chap. 23, Revised Ordinances, with all amendments thereto, was repealed, and a new ordinance was, after eleven months' consideration, adopted.

Sept. 1, 1875. " In Board of Aldermen, Sept. 1, 1875. *Ordered*, that the Committee on Sewers and Drains be directed to examine the present system of sewer assessments, and report whether in their opinion any change should be made either in the manner of assessment or the proportion thereof to be paid by the abutter."

Oct. 27, 1875. " In Board of Aldermen, Sept. 27, 1875. The Committee on Sewers and Drains, which was instructed to examine the present system of sewer assessments, and report whether any change should be made, report, recommending the adoption of the accompanying order."

The order was adopted as follows : —

" In Board of Aldermen, Nov. 3, 1875. *Ordered*, that future sewer assessments be made upon estates lying upon either side of streets where sewers are constructed, upon the basis of the area of said estates, within one hundred feet of the line of the street in which a sewer is constructed, at a rate to be determined upon by the Committee on Sewers and Drains, according to its judgment of benefit conferred."

Dec. 29, 1875. In answer to inquiries from Providence, R. I., Mayor Bradford states that the practice of the city of Cambridge is at present to deduct from the total cost of sewers one fourth or one third, and assess the remainder on abutting estates, upon the basis of the area to a depth of one hundred feet.

1877.

December, 1877. The City Engineer, W. S. Barbour, appends to his report a list of sewers by street, length, cost, amount

assessed, cost per foot, and a column called "average assessment per foot." The latter shows the average assessment per foot of length of both sides of sewer (including street crossings) for sewers built to the end of 1870, and for sewers built from 1875 to 1877. Between 1871 and 1875, the column shows that fifty cents was the rate fixed by ordinance to be applied to sewers assessed. Reference will be made below to the unreliability of comparisons drawn from this table.

1878.

Dec. 4, 1878. It was proposed, in Board of Aldermen, to adopt the principle of the "fifty-cent rule" again. An order, having the approval of the Committee on Sewers and Drains, was offered, providing for re-enacting Sect. 7, Chap. 23, of Revised Ordinances, as amended Sept. 10, 1873, and repealed May 26, 1875, with the further proviso, "that due credit shall be given for assessments heretofore made."

The order was further amended Dec. 14, "*Provided*, also, that nothing herein contained shall prevent the Board from making an assessment greater than fifty cents per foot upon any person specially benefited by the construction of a sewer, or for whose use the sewer was specially constructed, in which case such sum may be assessed as shall be agreed upon by the parties."

This order was lost by a vote of five to five, Dec. 11, and being again renewed Dec. 18, was again defeated.

Subsequently, however, the Committee on Sewers and Drains brought in a schedule of assessments, based on the "fifty-cent rule." These assessments they recommended for the sewers constructed during the year, and the Board certified their list without debate, and issued a warrant for their collection.

The foregoing recital of facts relating to the Oxford Street sewer assessment difficulty leads us to this statement, — that the practice of the city as to the principle of sewer assessments may be divided into two periods, viz. : —

1. *The period of twenty-four years previous to* 1870, *and*
2. *The period of nine years from* 1870 *to Nov.* 30, 1878.

The municipal law of the *first period* is found in the following ordinances : —

Ordinance relating to Main Drains or Common Sewers. Passed June 29, 1852.

An Ordinance in addition to an Ordinance relating to Drains and Common Sewers. Passed Oct. 12, 1859.

An Ordinance in relation to the Office and Duties of Superintendent of Streets and Drains. Passed Feb. 24, 1864.

An Ordinance in addition to an Ordinance in relation to Sewers. Passed Nov. 24, 1869.

The principle of assessment during these years (1846 to 1869, inclusive), as shown in the City Clerk's tables of 1872, was for the *first four years* to divide about ninety per cent of the cost of each sewer into portions according to valuation of property benefited. "In 1850 the rule was adopted of assessing the abutters to the distance of one hundred feet from the street line, provided their lots were of that depth, the assessment being made by the square foot."

This rule generally prevailed until the adoption of the fifty-cent rule, Sept. 10, 1873.

The table prepared by the City Clerk, and hereafter submitted in this report, shows that during the *seven years* following the first four of this period, viz., 1850 to 1856, the actual assessments equalled seventy-four per cent of cost, and by the same table it appears that each owner of a lot one hundred feet or more deep paid for the same privilege at a rate greatly varying, some being assessed *nearly five times as much as others.* For *the thirteen years* following (1857 to 1869 inclusive), the assessments under this rule equalled seventy-three per cent of cost. The tables before referred to show the length in feet and cost per foot for sewers constructed during these thirteen years, and a column called the "average assessment per foot of sewer on each abutter." This column must not be taken as furnishing any means of comparison with the application of the fifty-cent rule, as it must be understood that all streets, sidewalks, squares, and exempted estates crossed in the length of a sewer are counted in obtaining this so-called average. Therefore, unless the city be counted an abutter to the extent of such crossings, the column is misleading. It seems necessary to call attention to this, as the same figures are copied into the City Engineer's Report for 1877, in connection with sewers assessed on the "fifty-cent rule."

However, we have from this column the means of comparison for these thirteen years as to the equality of the division of the

seventy-three per cent of cost among parties benefited, and we find variations between the extremes to be from fifteen cents to ninety-one cents, that is, some parties paid for sewerage *over six times what certain others did.*

An examination of the figures of the table will show that one quarter of the whole number of sewers in the list would rate below thirty cents, and one third above fifty cents, and that the average variation between the two extremes cited would be considerable.

It is probably true that the cause for this difference is owing chiefly to the fact that sometimes there was a large sewer to assess for, and sometimes there was a smaller and cheaper one; but we must not forget the additional cause in the fact of increase in cost of labor from 1857 to 1869.

The principle of charging twenty-five per cent to the city, and assessing seventy-five upon abutters, was deliberately chosen and probably uniformly followed during this whole period of twenty-four years prior to 1870.

Sect. 7 of Chap. 23, Revised Ordinances, first passed June 29, 1852, is as follows: —

"The mayor and aldermen, in making assessments for defraying the expense of constructing or repairing common sewers or main drains, shall deduct from the expense such part as they may deem proper, to be charged to, and paid by the city; shall, agreeably to law, apportion and assess the remainder thereof upon the persons and estates deriving benefit therefrom, either by entering their drains therein, or any more remote means; shall fix the time when such assessments shall be paid, and deliver the same to the City Treasurer for collection."

This section was amended on the adoption of the "fifty-cent rule," Sept. 10, 1873.

In a hearing before the Board of Aldermen, March 7, 1872, ex-Alderman George W. Park said (see City Document, Oxford Street sewer, March, 1872), "The rule has always prevailed in the practice of the Board, of assessing about three fourths of the cost of a sewer upon the lands in its vicinity, and paying about one fourth from the funds obtained by general taxation. This one fourth has been considered about the fair proportion to be paid by the city at large, in consideration of the use of the sewer in taking surface water from the streets, and the general benefit for sanitary purposes."

These facts and their results exhibit sufficiently the principle upon which estates were assessed during the first twenty-four years of our municipal existence.

The importance of the *second period* of nine years (1870 to 1878) appears from this statement. During these nine years the city has spent, on sewers, *over eighty per cent* of the total amount spent during the thirty-three years of its existence, as follows: —

Total expenditure for reservoirs and drains, sewers, construction and maintenance, according to the Auditor's Report, after deducting amount of reimbursement on three sewers by Somerville, is	$936,284.00
Of which there were spent during the years 1870 to 1878, inclusive, ...	777,567.64
or eighty-two per cent of the total.	

This period was, as we see, one of liberal expenditure, and we turn with new interest to the inquiry, *Were the burdens incurred by this outlay distributed according to the rules followed for twenty-four years?*

It is fair to say that the authorities tried. Sewers built in 1870 were assessed to sixty-four per cent (64%) of their cost, divided according to area. It is to be presumed that these assessments were generally acquiesced in by parties affected. Some of the sewers thus assessed were larger than the average which had been constructed, several costing over $2 per foot. But in 1871, with the North Avenue sewer costing over $5, the Kirkland Street costing over $6, and the Oxford Street costing, finally, over $10 per foot, the trouble began. The plan of dividing the usual proportion upon the immediate abutters of the sewer was seen to be very unjust and manifestly unreasonable. After consultation with the highest legal authority of the Commonwealth, it was determined to apply the principle of the law of Chap. 48, Sect. 4, which has been heretofore quoted, and to ascertain the amount to charge to those who, "by more remote means," received benefit. Estates situated on lateral sewers, discharging through the new sewer, were assessed as for a remote and indirect benefit. The land within one hundred feet of the street "on which the sewer was built was assessed at the rate of one cent per square foot, at two thirds of this rate for

the next one hundred feet, and one third of this rate for the remainder." Credit was to be given for expenditures for private sewers built, and for sums already paid to the city as assessments for other sewers.

This rule was applied to the Oxford Street sewer and its branches. Of the total cost, $74,662.92, sixty-five per cent, or $48,985.89, was assessed in this way; and expecting a large reduction from this amount by abatements, Mr. Chase, in his report, March 7, 1872, says it would leave "a large sum to be obtained from those unimproved lands at such times of improvement as will legalize the collection of the same."

The joint opinion of Judges Hoar and Curtis is incorporated with this report, as valuable reference is made therein to questions involved.

Sewer Assessments.

OPINIONS OF JUDGES E. R. HOAR AND B. R. CURTIS, ON CERTAIN QUESTIONS RELATING TO ASSESSMENTS FOR SEWERS.

The action of the city of Cambridge concerning the construction, maintenance, and repair of sewers and drains, and assessing the cost of the same, must be governed by Stat. 1869, Chap. 111, and by Chap. 48 of the General Statutes. The general principles of these statutory provisions are found in the statute of 1841, Chap. 115; and have been the subject of full and careful judicial consideration in the cases of Downer *v.* Boston, 7 Cush. 277, and Wright *v.* Boston, 9 Cush. 233.

Applying these principles to the several propositions and questions submitted to me, I have reached the following conclusions: —

I. "A sewer is laid in a street, and an abutter does not choose to enter it."

Not only those who enter particular drains into a main sewer are subject to assessment, but also those who by more remote means receive a benefit for draining their cellars or land. The capacity of the land to be benefited by a drain is the subject of taxation. If, therefore, the abutter receives benefit from the main sewer for draining his cellar or land, he may be assessed, whether he chooses to avail himself of the benefit or not — but not otherwise.

II. "A sewer has proved insufficient, and it is rebuilt, in whole or in part, over the same ground."

The cost of rebuilding is, in my judgment, the subject of assessment, as much as the cost of the original construction. The city may make such sewers as it finds necessary, and its powers are not exhausted by having once made a sewer in any street.

III. "Estates at some distance from a large trunk-sewer, which estates will be drained by sewers hereafter to be constructed, and which will enter said large trunk-sewer."

This question is one of considerable difficulty, and an argument of some force might be presented to show that such prospective benefit would come within the view of the statutes, and be a subject of assessment. But I am, on the whole, of opinion that such an assessment would not be sustained by the courts; and that the

"benefit for draining his cellar or land" would be construed to mean a present benefit, which the owner of the land could avail himself of at his own option at the time of the assessment; and not a future contingent benefit, depending upon the construction of a public work which might never be built. The connecting sewers must be constructed before an assessment could be made under such circumstances.

IV. "Estates heretofore assessed for sewers whose outlets have, through the building-up of the city, the introduction of Fresh Pond water, &c., proved insufficient, and said sewers have been connected with a new large trunk-sewer."

I am of opinion that the cost of such new large trunk-sewer is the proper subject of assessment upon persons whose lands are drained, or have the capacity of drainage into it through branch sewers previously constructed, as well as those who use or may use it more directly.

V. "Estates heretofore assessed, as remotely benefited by a sewer at some distance, and a new sewer is now built on the street on which they are situated."

I am of the opinion that the new sewer is a subject of assessment against those who enter it with their drains, or who are more remotely benefited by it. The sufficiency of an existing sewer is a matter to be decided by the authorities of the city; and the only question is, whether the particular sewer for which an assessment is made is one from which the persons assessed derive a benefit, by entering it with their particular drains, or by more remote means for drainage; and not what other means of drainage have been previously provided.

VI. "The point of time at which a lien attaches to the land with reference to: an order for building a sewer, — its completion, — or the time of assessment."

In my opinion, at the time of assessment.

E. R. HOAR.

May 9, 1871.

I concur in the above.

B. R. CURTIS.

Most of the persons thus assessed refused to pay, and the matter, being still unsettled at the close of the year, was referred to the Board of Aldermen for 1872. But 1872 passed without progress in the vexed question. An ordinance providing that sewers be constructed at the public expense was defeated after long debate, and the parties assessed still pressed for relief. Mayor Bradford, in his inaugural in January, 1873, says, "I cannot refrain from saying that the time appears to have arrived when an entire change of system will prove in the highest degree acceptable to the majority of the people in the abandonment of the present one of assessment, and the adoption of the suggested plan, by which the city shall build and own all the drains as now, embodying their cost in a funded loan, and afterwards charging a fixed fee for entrance, in accordance with the provisions of Sect. 19, amended charter." No action was taken on this proposition.

Sewers were constructed in 1871 and assessed (not including the Oxford Street) to fifty-one per cent of cost, and in 1872 to forty per cent. Very few of them were paid, the whole matter

remaining in abeyance, both from the attempts to overthrow the assessments on the North Avenue and Oxford Street sewers, as well as the doubt attending the questions, — what laws were in operation, and what branch of the government could proceed in the matter. Sewer assessments amounting to over $75,000 were payable at this time.

The *ordinance* which had been in operation for twenty-one years *was amended* Sept. 10, 1873, so as to provide in relation to sewer assessments, as follows : —

"Sect. 7. The City Council, in making assessments for defraying the expense of constructing or repairing common sewers or main drains, shall assess not exceeding fifty cents per running foot on each side of all sewers and drains so constructed, upon all persons and corporations owning land abutting on streets where such sewers or drains are laid, or owning land through which the same are laid, shall fix the time when such assessments shall be paid, and deliver the same to the City Treasurer for collection. *Provided,* however, that corner lots, having been assessed for a sewer on one street, shall be exempt from an assessment for a sewer on the other, to the extent of seventy-five feet from the corner; and no person whose estate has not been assessed or is not liable to an assessment for the construction of a sewer shall enter or in any manner connect his private drain or sewer with any sewer of the city, except on such terms and conditions as the City Council may establish."

Then followed, Dec. 10, 1873, a *joint order*, as follows : —

" *Ordered,* That all outstanding sewer assessments not paid or collected by sale of estates assessed, be abated in accordance with the schedule reported to the City Council by the Joint Standing Committee on Sewers and Drains ; and the City Treasurer is hereby authorized to receive from the persons whose estates have been assessed, as set forth in said schedule, the sums which they would have been liable to be assessed under the ordinance now in force, as set forth in said schedule.

" And that the Treasurer be and he hereby is authorized and instructed to refund to such persons named in said schedule as have paid their said assessments under protest, or after advertisement of the collector's intention to sell their said estates, or whose estates have been sold for collection of said assessments, and who have redeemed their said estates, on receiving the collector's deed of their said estates duly cancelled, such sums as will equal the difference between the sum so received by him on account of such assessments and the sums which such persons would have been liable

for, had their said estates been assessed in accordance with the ordinance regulating such assessments now in force and in accordance with the said schedule.

"*Provided*, however, that this order shall apply only to such parties named in said schedule, as shall settle with the city on the basis herein proposed, on or before the fifteenth day of January, 1874."

Approved by the mayor, Jan. 1, 1874.

And it was further

"*Ordered*, That the mayor be authorized to draw his order or orders on the City Treasurer in favor of such persons as shall see fit to avail themselves of the provisions of the order adopted by the City Council in relation to sewer assessments, whereby, according to the terms of said order, any money is to be refunded from the city treasury; and it is further ordered, that the amount so refunded in each case be abated from the assessment heretofore made in such case."

By these orders about $60,000 were abated or refunded on sewer assessments paid or due. The limit of time was inoperative, as for months thereafter all who applied received abatements to correspond with the schedule referred to.

Thus the city abandoned the theory of remote benefit. The following February the case pending in the Supreme Court was decided in favor of the city, fully confirming the validity of the assessments laid upon the Oxford Street and North Avenue sewers, but no further attempt was made to assess estates other than those abutting on the sewer.

The principle thus applied to the sewers built in 1871 and 1872 was followed each year until 1875.

This "fifty-cent rule" *affected the per cent* of cost distributed by the first assessment upon parties benefited as follows: —

The 65% of Oxford Street system in 1871 was reduced to . .	13%
The 51% of other sewers in 1871 was reduced to	23%
The 40% of sewers built in 1872 was reduced to	23%
Of the whole cost of sewers built in 1873, abutters were assessed	18½%
And of the whole cost of sewers built in 1874, abutters were assessed	17%

Thus the well-established custom of assessing seventy-five per cent of the cost of sewers on abutters was also abandoned, and the principle of paying the whole cost by the tax-payers, which

had been rejected repeatedly, was so far followed during this period of nine years (1870–78) that three quarters of the burden were left for the city to pay.

Your committee is unable to state *why the rate was fixed at fifty cents* for each front foot of lot. It may have been by an inspection of the City Clerk's table, made in 1872, which shows the average assessment for each linear foot of sewer for ninety-one sewers built from 1857 to 1870 inclusive. The average of this column is forty-four cents, but this does not represent the average per linear foot of lots assessed. This average would be found to be much more than forty-four cents; how much, it would be impossible to tell exactly, or even at all without an examination of the plan of each sewer.

It is evident that by the "fifty-cent rule" the city was to pay the cost of the whole sewer where it crossed streets, squares, and corner lots previously assessed, and all the remaining portions, if any, costing over $1 a foot; and in case of sewers costing less than $1 per foot would have a balance in its favor. The sum of fifty cents must have been arbitrarily assumed.

Your committee has not been able to learn of a single instance among other cities and towns assessing any portion of the cost upon parties benefited, where so small a rate was in operation.

The repeal of the amended ordinance of Sept. 10, 1873, though carried May 26, 1875, did not indicate any abandonment of the "fifty-cent rule" on the part of the City Council. It was understood to be inoperative as far as relates to assessments, under the recent decision of the Supreme Court (see the mayor's inaugural of January, 1875; also the order of Common Council, June 23, 1874), but the repeal was the final abandonment by the Common Council of the exercise of the authority granted in Sect. 7 of Chap. 48 of General Statutes, to provide the proportion which the city should pay towards the construction of sewers. Since this repeal, the Common Council has only controlled the sewer expenditure at the time of the appropriations.

The new ordinance makes no rule, but indicates that each Board of Aldermen shall determine the principle upon which sewers shall be assessed.

A *new rule of division* was adopted by the Board of Aldermen, Nov. 3, 1875, and the *area plan* was substituted for the "fifty-cent rule."

The order adopted at that time provides no rule to fix the proportion of cost to be assessed, neither does the report of the committee propose any, although they were ordered to report whether, in their opinion, any change should be made in the "proportion" by the existing system. For information on this point we are left to the statement heretofore quoted, made by Mayor Bradford, that sixty-six to seventy-five per cent was so assessed, and to the results from the tables of the City Engineer, as follows: —

Of the cost of sewers of			1875,	there	was	assessed	. . . . .	36%
"	"	"	1876,	"	"	"	. . . . .	7%
"	"	"	1877,	"	"	"	. . . . .	64%

With regard to the sewers of 1876, it would be proper to say that, leaving out of the list the cost of the Binney Street sewer, and the small sum assessed for it, we find that of the remainder sixty-eight per cent was assessed.

The year 1878, the last of the period of nine years which we are considering, marked a *practical return to the "fifty-cent rule"* as before described.

Thus, this period closes. It was begun in liberal expenditure, greatly increased, and afterward very much reduced. No rule was followed which divided the cost of sewers of much over $1 per running foot, without leaving more than three quarters of their cost to be paid by tax on real and personal property.

We here copy *the tables of the City Clerk*, first published in 1872, also the *tables in the City Engineer's Report of* 1877, continuing the same to 1877. We have added to the list the facts for the year 1878. The division into periods to correspond with our report, together with the footings of the columns, and the Oxford Street system statement, are also added by us:

A table showing *cost of sewers* each year, *the amount of assessment*, and percentage of cost assessed:

Statement of *sewer loan* by City Auditor.

SEWERS IN CAMBRIDGE: THEIR COST AND ASSESSMENT.

(Compiled by the City Clerk in 1872.)

The rule first adopted was to make the assessment in decimals of the value of the property.

Date.	Street.	Cost.	Assessed.	Balance.	Rate.
1845.	Austin	$1,586.15	$1,435.85	$130.30	.01–.006–.003
	Pine	347.72	300.92	46.80	.0065
	Brattle Square	198.41	166.90	31.51	.003–.002–.001
1846.	Cambridge	152.99	151.80	1.99	.0066
	Otis	34.53	34.45	.08	.0013
1847.	Prospect	500.84	500.84	. . .	Built by owners.
1848.	North	559.05	511.50	47.55	. . . .
	Winsor	. . .	125.72	. . .	. . . .
		$3,505.51	$3,227.98		

In 1850 the rule was adopted of assessing the abutters to the distance of 100 feet from the street line, provided their lots were of that depth. The highest rate per linear foot of sewer would be paid by the abutter whose land was 100 feet or more in depth; if of half that depth, he would pay one-half of the highest rate. The assessment being made by the square foot, one having a frontage of 200 feet and a depth of 50 feet would pay the same assessment as one having a frontage of 100 feet and a depth of 100 feet. The rate given in the following table is the *highest rate* which could be assessed for a linear foot of sewer; but without an examination of the plan it is impossible to determine the minimum or average rate paid. The rate is given in cents, and fractions are omitted.

Date.	Street.	Cost.	Assessed.	Balance.	Highest Rate.
1850.	Cambridge	$1,034.03	$764.05	$269.98	$0.50
1851.	Hampshire	5,800.00	4,349.59	1,450.41	.31
	Otis	800.00	598.05	201.95	.40
	Market	600.00	435.36	164.64	.30
	Cross	1,125.00	837.06	287.94	.30
	Washington	3,550.00	2,595.94	948.06	.40
1852.	Gore	1,244.00	921.25	322.75	.50
	Cherry	603.00	436.24	166.76	.30
	Main	1,290.50	965.76	324.74	.40
	Broadway	1,436.46	1,030.52	405.94	.31
	Baldwin	1,130.50	845.04	285.46	.16

Date.	Street.	Cost.	Assessed.	Balance.	Highest Rate.
1853.	Dunster	$1,162.00	$795.47	$366.53	$0.50
	Prospect	407.87	369.73	43.02	.24
	Tremont	275.00	265.08	9.92	.24
	Clark	517.32	387.77	129.55	.35
	Moore	427.00	330.70	96.30	.35
	Spring	1,753 59	1,278.16	445.43	.50
1854.	Brattle	1,235.31	856.30	379.01	.37
	Quincy	1,362.00	931.10	430.90	.35
	Cambridge	755.56	564.70	190.86	.32
	Lincoln	696.00	388.42	307.58	.24
	Austin	205.00	157.85	47.15	.40
1855.	Kirkland	900.00	674.09	225.91	.30
	Austin	1,554.75	1,044.36	510.39	.36
1856.	Amory	525 00	245.09	279.91	.24
	Inman	972.30	572.57	399.73	.24
1855.	Thorndike	1,781.00	1,335.75	445.25	.85
	Otis	431.73	287.86	143.87	.51
1856.	Thorndike	772.00	578.85	193.15	.56
	Cambridge	678.55	508.86	169.64	.37
	Fayette	206.90	155.03	51.87	.35
	Prospect	175.70	131.76	43.93	.43
	Bridge	2,264.98	1,698.40	566.58	.76
	Lee	1,019.70	764.00	255.70	.41
	Broadway	388.05	290.81	97.24	.61
	Quincy	182.17	136.39	45.78	.25
	Kirkland	537.39	403.39	134.00	.30
	Norfolk	422.34	316.60	105.74	.41
	Columbia	786.42	589.79	196.63	.32
	Remington	2,072 81	1,557.58	515.23	.56
	Harvard	231.30	173.42	57.88	.46
	"	593.29	593.29	. . .	.31
	Pearl	225.71	169.40	56.31	.51
	Hancock	3,684.19	2,905.09	959.10	.55
		$47,657.42	$35,236.52		

When the present City Clerk came into office he recorded the length of each sewer. The following table shows also the average cost per foot of sewer, and average assessment per foot of length of both sides of sewer, including street-crossings.

Date.	Street.	Length in Feet.	Cost.	Assessed.	Balance.	Cost per Foot.	Assessment Ratio.*
1857.	Otis	2,210	$2,246.24	$1,684.27	$561.97	$1.01	$0.38
	Bridge	546	587.72	440.76	146.96	1.08	0.40
	Harvard	1,209	915.37	686.53	228.84	0.75	0.28
	River	1,126	864.27	534.67	329.58	0.77	0.28
	Prospect	850	641.14	480.84	160.30	0.75	0.28
	Harvard	1,187	1,012.02	758.76	253.26	0.85	0.32
	Winsor	662	489.92	367.38	122.54	0.74	0.27
	Brookline	2,011	1.572.25	1,179.16	393.09	0.78	0.29
	Sparks	1,230	1,311.69	983.77	327.92	1.07	0.40
	Thorndike	325	324.25	243.19	81.06	1.05	0.37
	Bath to Garden	2,300	3,190.78	2,127.19	1,063.59	1.39	0.46
			$13,155.65	$9,486.52			

* Called in the original printed statement, "Assessment per foot of sewer on each abutter."

Date.	Street.	Length in Feet.	Cost.	Assessed.	Balance.	Cost per Foot.	Assessment Ratio.
1858.	Craigie	342	$241.27	$180.85	$60.42	$0.70	$0.26
	Washington	310	181.93	136.45	45.48	0.59	0.22
	Lee	564	412.24	309.18	103.06	0.73	0.27
	Norfolk	259	173.56	130.04	43.52	0.67	0.25
	Winsor	330	216.11	162.08	54.03	0.65	0.24
	Mount Auburn	783	682.74	512.06	170.68	0.87	0.32
	Centre	468	372.96	279.72	93.24	0.79	0.30
	Mount Auburn	280	243.28	182.46	60.82	0.87	0.33
	Prospect	136	88.42	66.31	22.11	0.65	0.24
			$2,612.51	$1,958.15			
1859.	Cambridge	1,244	$1,127.40	$567.60*	. . .	$0.90	$0.22
	Cambridge	1,816	1,805.77	1,354.33	$451.44	0.99	0.37
	Cambridge and Tremont	1,209	1,144.00	1,000.91	143.09	0.94	0.41
	Bridge	928	943.00	707.04	235.96	1.01	0.38
	Magazine	3,414	3,604.49	2,334.25	. . .	1.06	0.34
	Webster Ave.	458	467.50	300.56	116.94	1.02	0.32
			$9,092.16	$6,824.49			
1860.	Winter	780	$601.54	$451.12	$150.42	$0.77	0.29
	Spring	367	303.48	227.56	75.92	0.83	0.31
	Pine	1,038	583.31	437.46	145.85	0.56	0.21
	Union	300	195.73	89.96	105.77	0.65	0.15
	Austin	522	339.61	254.73	84.88	0.65	0.24
	Broadway	322	251.38	188.54	62.84	0.78	0.29
	Broadway	1,776	1,446.97	1,085.07	361.90	0.81	0.30
	Garden and North Avenue	4,369	4,685.19	3,513.89	1,171.30	1.07	0.40
			$8,407.21	$6,248.33			
1861.	Vine	316	$206.00	$154.49	$51.51	$0.65	$0.25
	North Avenue	1,200	866.00	736.00	130.00	0.72	0.34
	Bay and Green	850	764.00	572.98	191.02	0.90	0.33
	Trowbridge	581	356.00	266.97	89.03	0.61	0.23
	Magazine	170	156.00	117.00	. . .	0.92	0.34
			$2,348.00	$1,847.44			
1862.	Broadway	530	$339.12	$254.34	$84.78	$0.64	$0.24
1863.	Main	622	$665.00	$443.33	$221.67	$1.07	$0.35
	Harvard	414	264.00	198.00	66.00	0.64	0.24
	Harvard and Clinton	1,072	984.00	738 00	246.00	0.92	0.34
	Elm	1,114½	1,075.00	750.00	325.00	0 96	0.34
	Garden and Shepard	2,272	2,292.00	1,719.00	573.00	1.00	0.38
			$5,280.00	$3,848.33			
1864.	Fayette	952	$1,196.00	$897.00	$299.00	$1.25	$0.47
1865.	Spring	1,287	$1,304.19	$978.13	$326.06	$1.01	$0.38
1866.	Magazine	1,517	$2,098.29	$1,573.71	$524.58	$1.38	$0.52
	Main	602	564.63	499.93	66.64	0.94	0.42
	Garden	797	1,270.00	952.48	317.52	1.59	0.60
	Broadway	734	960.00	720.00	240.00	1.30	0.50
	Avon	151	337.00	252.74	84.26	2.23	0.84
	Prospect	226	228.00	171.00	57.00	1.00	0.38
			$5,457.92	$4,169.86			

* Paid by the Railroad Company.

Date.	Street.	Length in Feet.	Cost.	Assessed.	Balance.	Cost per Foot.	Assessment ratio.
1867.	Columbia	258	$172.00	$129.00	$43.00	$0.67	$0.25
	Amory	377	395.00	296.25	98.75	1.06	0.40
	Gore	1,193.50	1,970.00	1,477.50	492.50	1.65	0.62
	Washington	150	176.00	132.00	44.00	1.17	0.44
	Craigie	162	237.52	178.14	59.38	1.46	0.55
	Winsor	179	218.00	163.50	54.50	1.22	0.45
	Norfolk and Harvard	763	1,252.60	939.45	313.15	1.64	0.61
			$4,420.52	$3,315.84			
1868.	Inman	580	$708.57	$531.39	$177.18	$1.22	$0.46
	Suffolk	443	526.28	394.60	131.68	1.19	0.44
	Western Ave.	1,267	3,800.52	1,900.20	1,900.32	3.00	0.75
	Pleasant	800	998.18	748.63	249.55	1.25	0.46
	Otis	485	600.00	450.00	150.00	1.24	0.46
	Chauncey	548	629.05	471.79	157.26	1.15	0.43
			$7,262.60	$4,496.61			
1869.	Putnam	1,214	$1,358.42	$1,017.39	$341.03	$1.12	$0.42
	Prison Point	556	1,227.65	920.48	307.17	2.21	0.83
	Ellery	486	823.40	616.98	206.42	1.70	0.63
	Brookline	384	434.57	325.80	108.77	1.13	0.43
	Craigie	325	782.89	586.67	196.22	2.40	0.90
	Pearl	607	1,155.12	866.18	288.94	1.90	0.71
	Auburn	472	730.00	547.44	182.56	1.55	0.58
	Linnæan	1,488	2,902.20	2,175.56	726.64	1.95	0.73
	Phillips Pl. etc.	1,852	4,164.40	3,122.37	1,042.03	2.25	0.84
			$13,578.65	$10,178.87			
1870.	Broadway and Davis	1,864.25	$6,291.74	$3,145.69	$3,146.05	$3.37	$0.84
	Third	240	325.91	244.41	81.50	1.36	0.51
	Norfolk	311	408.78	306.42	102.36	1.31	0.49
	Franklin	448	580.42	435.35	145.07	1.29	0.48
	Charles and Fifth	867	1,892.21	1,419.39	472.82	2.18	0.82
	Mount Auburn	226	441.53	331.15	110.38	1.95	0.73
	Market	238	338.75	294.44	97.31	1.64	0.61
	Bow	577	778.81	584.08	194.73	1.35	0.50
	Bowdoin	847.50	1,389.18	1,041.28	347.90	1.64	0.61
	Soden and Franklin	981.50	2,383.70	1,787.66	596.04	2.43	0.91
	Winsor	282	400.15	299.63	100.52	1.42	0.53
	Norfolk	769	1,418.45	1,063.38	355.07	1.84	0.68
	Sidney	682	1,334.20	1,008.02	326.18	1.96	0.72
	Harvard	557.80	1,816.49	908.31	908.13	3.25	0.81
	Austin	1,682	2,722.10	1,600.49	1,121.61	1.62	0.47
	Linden	440.30	371.51	166.11	205.40	.84	0.19
		11,013.35	$22,943.93	$14,632.81			
1871.	North Avenue	6,773	$36,207.60	$17,703.98*	. . .	$5.35	$1.30
	Beech	603	1,747.50	1,081.15	. . .	2.90	0.89
	Chester	308	736.00	583.24	. . .	2.39	0.94
	Columbia	631	832.50	322.00	. . .	1.32	0 25
	Kinnaird	282	352.50	264.29	. . .	1.25	0.47
	Concord Ave.	540	681.00	411.41	. . .	1.26	0.38
	Auburn	222	277.50	193.39	. . .	1.25	0.43
	Mount Auburn	801.50	1,708.70	1,200.72	. . .	2.13	0.74
	Story	547	911.55	435.41	. . .	1.67	0.40
	Hilliard	501	819.02	561.72	. . .	1.63	0.56
	Oxford and Branches.						
	Charles River, Chestnut, Oxford St., and College yard,	5,002.25	53,983.00	. . .	. . .	10.79	. . .
	Kirkland Street	2,168.50	14,572.25	48,985.89	. . .	6.72	. . .
	Mellen						
	Wendell	3,121					
	Sacramento		6,107.67	. . .	. . .	1.96	. .
		21,690.25	$119,250.29	$71,743.20			

* The assessments for 1871 and 1872 were afterwards greatly abated by order of December 10, 1873. See City Engineer's Tables for revised assessments.

For particulars concerning the Oxford Street and branches, see City Engineer's Reports for 1870–71, and March 12, 1872.

The original assessment was $48,985.89. The land within 100 feet of the street was assessed at the rate of one cent per square foot, at two-thirds of this rate for the next 100 feet, and one-third of this rate for the remainder.

Date.	Street.	Length in Feet.	Cost.	Assessed.	Balance.	Cost per Foot.	Assessment Ratio.
1872.	Charles and Sixth	856.10	$1,509.35	$1,001.91*	$507.44	$1.76	$0.58
	Auburn	222	277.50	193.39	84.11	1.25	.43
	Banks, Cowperthwaite, Crane, and Flagg	2,698.75	5,268.73	4,414 88	853.85	1.96	.82
	Inman	324	486.00	364.49	121.51	1.50	.56
	Shepard	366	600.12	643 17	. . .	1.64	.88
	Auburn	371.20	477.20	476.45	.75	1.30	.65
	Clark	233	295.65	216.04	79.61	1 27	.46
	Farwell Place	333	423.00	423 00	. . .	1.27	.63
	Wright	439	559 95	389.28	170.67	1.27	.44
	Green	441	670.50	670.50	. . .	1.52	.76
	Putnam	630.75	1,101.97	1,035.10	66.87	1.74	.82
	Warland	451	623.02	623.02	. . .	1.38	.69
	Webster	426.50	611.33	611.33	. . .	1.43	.72
	Franklin	214	274.10	254.56	19.54	1.28	.59
	Winsor	230	264 50	264.50	. . .	1.15	.57
	Thorndike	277	1,172.78	1,012.50	160.28	4.23	1.83
	Follen	688	1,093.60	920.12	173.48	1.59	.67
	Oxford, Frost, Forest, and Roseland	2,796	8,397.40	5,449.88	2,747.52	3.00	.98
	Pearl, etc.	2,532.79	13,509.18	4,811.63	8,697.55	6.12	.95
	Prescott	150	174.30	155.85	18.45	1.16	.52
	Prospect	237	277.05	277.05	. . .	1.16	.58
	†Otis, Thorndike, Spring, and North	3,157.50	27,852.49	2,441.03		§.82	
		18,074.59	$65,919.72	$26,649.68			

Sewers in Cambridge, their Cost and Assessments.

From Table appended to City Engineer's Annual Report for 1877.

Date.	Street.	Length in Feet.	Cost.	Revised Assessment.	Balance.	Cost per Foot.	Assessment Ratio.‡
1871.	North Avenue	6,773 00	$36,207.60	§$6,317.96	$30,289.64	$5.35	....
	Beech	603.00	1,747.50	488.40	1,259.10	2.90	....
	Chester	308.00	736.00	223.21	512.79	2.39	....
	Columbia	631.00	832.50	540.04	292.46	1 32	....
	Kinnaird	282.00	352.50	185.94	166.56	1.25	....
	Concord Avenue	540.00	681.00	410.00	271.00	1.26	....
	Auburn	222.00	277.50	118.41	159.09	1.25	....
	Mt. Auburn	801.50	1,708.70	748.51	960 19	2.13	....
	Story	547.00	911.55	375 16	536.39	1.67	....
	Hilliard	501.00	819 02	466.50	352.52	1.63	....
	Otis	190.00	313.50	567.75	. . . .	. . .	....
	Oxford and branches	10,291.75	74,662.92	10,011.97	64,650.95	. . .	....
		21,690.25	$119,250.29	$20,453.85	$98,796.44		

* The assessments for 1871 and 1872 were afterwards greatly abated by order of December 10, 1873. See the City Engineer's Tables for revised assessments.

† Transferred from the City Engineer's Tables.

‡ The assessments shown in this table for the years 1871 to 1878 were made under the "fifty-cent rule." See ordinance approved September 10, 1873. The "assessment ratio" is not known, but can easily be found.

§ This column for 1871 and 1872 shows the abated or revised assessments. For the original assessments, see preceding table.

The original assessment for the Oxford Street sewer was $48,985.89. The land within 100 feet of the street was assessed at the rate of one cent per square foot, at two-thirds of this rate for the next 100 feet, and one-third of this rate for the remainder.

Date.	Street.	Length in Feet.	Cost.	*Revised Assessment.	Balance.	Cost per Foot.	Assessment Ratio.†
1872.	Charles and Sixth	856.10	$1,509.35	$695.43	$913.92	$1.76	....
	Auburn	322.00	277.50	118.41	159.09	1.25	....
	Banks, Cowperthwaite, Crane, and Flagg	2,698.75	5,268.73	2,136.21	3,132.52	1.96	....
	Inman	324.00	486.00	227.03	258.97	1.50	....
	Shepard	366.00	600.12	‡367.92	232.20	1.64	....
	Auburn	371.20	477.20	269.53	207.67	1.30	....
	Clark	233.00	295.65	133.59	162.06	1.27	....
	Farwell Place	333.00	423.00	331.81	91.19	1.27	....
	Wright	439.00	559.95	340.67	219.28	1.27	....
	Green	441.00	670.50	384.36	286.14	1.52	....
	Putnam	630.75	1,101.97	570.40	531.57	1.74	....
	Warland	451.00	623.02	336.21	286 81	1.38	....
	Webster	426.50	611.33	308.20	303.12	1.43	....
	Franklin	214.00	274.10	290.55	. . .	1.28	....
	Winsor	230.00	264.50	177.30	87.20	1.15	....
	Thorndike	277 00	1,172.78	537.50	635.28	4.23	....
	Follen	688.00	1,093.60	421.41	672.19	1.59	....
	Oxford, Frost, Forest, and Roseland	2,796 00	8,397.40	2,244.55	6,152.85	3.00	....
	Pearl, Tufts, and Chestnut	2,532.79	13,509.18	2,645.47	10,863.71	6.12	....
	Prescott	150.00	174.30	168 28	6.02	1.16	....
	Prospect	237.00	277.05	172.21	104.84	1.16	....
	Otis	3,157.50	27,852.49	102.44	25,411.46	8.82	....
	Thorndike			115.41			....
	Spring			98.59			....
	Ninth			2,124.59			....
		18,074 59	$65,919.72	$15,318.07	$50,601.65		
	Langdon	335 00	private.				
	Lake View Avenue	1,135.00					
	Tufts	433.00					
	Chestnut	428 00					
	Jefferson	210.00					
	Inman	361.75					
	Fourth	145 00					
				Assessed.			
1873.	Allston	381.00	$612.75	$397.06	$215.69	$1.61	....
	Appian Way	505.00	1,054.25	387.98	666.27	2.09	....
	Beaver	337.30	433.25	286.12	147.13	1 28	....
	Boardman	112.00	155.95	116.42	39.53	1.53	....
	Brattle	207.80	422.50	211.70	210 80	.78	....
	‡Brewery	376.00	4,713.02	239.00	4,474 02	12.54	....
	‡Brewery	227 20	1,519.03	139.00	1,380.03	6.68	....
	‡Brighton	368 00	990.76	322.64	668.12	2 69	....
	‡Carver	185.00	262.20	89.50	172.70	1.42	....
	Cedar	1,200.70	3,941.55	1,064.21	2,877.34	3.28	....
	Columbia	248.75	337.37	175.32	162.05	1.35	....
	Concord Avenue	2,733.37	18,867.70	. . .	18,867.70	6.90	....
	Cottage	367.20	425.60	305.44	120.16	1.16	....
	Crescent	240.50	259.50	234.57	24.93	1.08	....
	De Wolf	383 60	564.20	403.25	160.95	1.47	....
	‡De Wolf	110 75	452 92	. . .	452.92	4.09	....

* This column for 1872 shows the abated or revised assessments. For the original assessment, see preceding table.

† The assessments shown in this table for years 1871 to 1875 were made under the "fifty-cent rule." See ordinance approved September 10, 1873. The "assessment ratio" is not known, but can be easily found.

‡ Average cost of system.

Date.	Street.	Length in Feet.	Cost.	Assessed.	Balance.	Cost per Foot.	Assessment Ratio.
1873.	*Dyke	280.00	$1,145.08	$185.55	$959.53	$4.09	†
	*East	256.78	639.33	204.31	435.02	2.45	....
	Eighth	156.00	163.85	111.65	52.20	1.05	....
	*Eliot	486.00	1,307.34	323.41	983.93	2.68	....
	Ellery	470.50	721.75	498 29	223.46	1.53	....
	Erie	348.00	448 00	318.90	129.10	1.28	....
	Fairfield	125.00	250.00	. . .	250.00	2.00	....
	*Fairmont	367.50	607 00	345.17	261.83	1.65	....
	Frank	450 00	692.00	450.00	242.00	1.53	....
	Franklin	370.90	700.50	361.30	339.20	1.89	....
	Franklin	476.70	615.93	406.25	209.68	1.29	....
	Gardner	266.00	377.10	136.17	240.93	1.41	....
	Gore	133.50	400.50	. . .	400.50	3.00	....
	Gore	461 00	670.90	367.29	303.61	1.45	....
	Green	992.60	1,359.30	955.78	403.52	1.37	....
	*Harvard	3,025.00	37,923.66	576.70	37,346.96	12 54	....
	Hastings	1,826.14	1,895.59	875.53	1,020.06	1.04	....
	Hastings	55.50	72.98	29.71	43.27	1 31	....
	*Holyoke	278.00	502.21	296.91	205.30	1 81	....
	Kent	398.00	876.55	337.93	498.62	2.10	....
	Lopez	423.50	409.40	336.65	72.75	0.97	....
	*Main	2,020.72	13,510.27	1,733.68	11,776.59	6.68	....
	*Mill	377.00	681.04	302.00	379.04	1.81	....
	*North	214.30	305.02	134.75	170 27	1.42	....
	Pioneer Place	190.00	231 31	. . .	231.31	1.22	....
	*Pleasant	2,773.00	14,003.07	2,631.72	11,371.35	5.05	....
	Pleasant Place	357.50	587.35	310.16	277.19	1.64	....
	Prescott	150.00	174.30	. . .	174.30	1.16	....
	Prospect	237.00	277.05	. . .	277.05	1.17	....
	Prospect	148.50	186.00	133.57	52.43	1.26	....
	*Sixth	657.25	8,239.78	576.70	7,663.08	12.54	....
	Somerset	299.00	421.65	231.58	190.07	1.41	....
	*South	167.50	451.00	212.95	239.05	2.69	....
	Spruce	498 00	1,647.75	1,031.12	616.63	3.31	....
	Sydney	95.00	290.44	. . .	290.44	3.06	....
	Village	206.30	264.50	210.54	53.96	1.28	....
	Vine	348.50	448.50	266.09	182.41	1.28	....
	Webster Avenue	835.35	2,521.54	747.21	1,774.33	3.02	....
	Webster Avenue	325.50	420.87	237.10	183.77	1.29	....
	*Wendell	263.30	383.55	270.69	112 86	1.46	....
	Western Avenue	357.00	465.30	. . .	465.30	1.30	....
		30,151.51	$132,261.81	$20,529.57	$111,731.24		
	Belmont	262.40	} private.				
	Chestnut	425.00					
	Erie	273.00					
	Prince	164.00					
	Water Works	555.00					
1874.	Appleton	152.00	$360.11	. . .	$360.11	$2.37	....
	Ash Court	245.90	305.08	$236.90	68.18	1.25	....
	Athens	22.00	190.95	. . .	190.95	8.63	....
	*Avon Hill	628.90	1,048.24	546.84	501.40	1.83	....
	Bennett	374.40	360.70	320.66	40.04	.96	....
	Brattle	574.50	1,526.00	483.42	1,042.58	2.66	....
	Brewery	224.00	285.45	194.47	90.98	1 27	....
	Bridge	1,394.33	68,858.84	. .	68,858.84	49.38	....
	Brown	429 00	338.91	356.06	17.15	.79	....
	Cambridge	152.00	333.36	110.30	223.06	2.19	....
	Cambridge	1,328.50	8,218.50	1,055.51	7,162 99	6.19	....
	Charles	259 75	909.12	. . .	909.12	3.50	....
	Chestnut	658.80	848.75	576 57	281.18	1 29	....
	Columbia	189 75	219 85	136.78	83.07	1.16	....
	Crane	26.00	190.95	. . .	190.95	7.34	....
	Decatur	446.20	416 59	364.60	51 99	.93	....
	*Donnell	560.60	1,416.50	459.95	965.55	2.53	....
	*Dublin	3,742.75	29,861.42	3,545.17	26,316.25	7.98	....
	Everett	756.00	965.33	669 40	295.93	1.28	....
	*Fairmont	504.80	3,026.55	390.66	2,635.89	6.00	....
	Fayerweather	1,919.50	1,579.88	996.68	583.20	1.55	....

* Average cost of system.

† The assessments shown in this table for years 1871 to 1875 were made under the "fifty-cent rule." See ordinance approved September 10, 1873. The "assessment ratio" is not known, but can be easily found.

Date.	Street.	Length in Feet.	Cost.	Assessed.	Balance.	Cost per Foot.	Assessment Ratio.
1874.	Fifth	231.00	$336.22	$1,132.50	$336.22	$1 46	†
	Flagg	76.50	145.65	. . .	145.65	1.90	....
	Forest	137.50	172.78	. . .	172.78	2.59	....
	Foster	377.70	627.40	298.23	329.17	1.66	....
	Fourth	168.00	255.55	82.91	172.64	1.55	....
	*Foxcroft	299.80	547.42	341.79	205 63	1 83	....
	Franklin	461.50	586.43	387.27	99.16	1.27	....
	Front	150.00	112.29	. . .	112,29	.75	....
	*Garden	281.80	712.04	266.55	445.49	2 53	....
	Green	318.70	429.10	258.46	170.64	1.35	....
	*Harding	560.25	1,233.74	516.96	716.78	2.20	....
	Harvard	410.00	580.60	276.43	304.17	1.42	....
	Hastings	115 50	129.95	117.00	12.95	1.12	....
	Hayes	597.30	691.00	528.67	162.33	77	....
	*Holly	395.30	918.82	302.60	616.22	2.32	....
	*Hunting	540 70	1,190.66	539.82	650.84	2.20	....
	Jay	373.70	427.22	274.55	152.67	1.14	....
	*Jefferson	576.20	1,268.92	555.56	713.36	2.20	....
	Kinnaird	300.80	337.48	213.46	124.02	1.12	....
	*McCabe	222.50	489.97	185.25	304.72	2 20	....
	Mill	109.00	165 15	. . .	165.15	1.51	....
	Mt. Auburn	72.00	75.95	. . .	75.95	1.05	....
	*Mt. Pleasant	509.60	1,261.46	443.62	817.84	2.46	....
	Orchard	1,223.90	1,997.82	1,115.25	882.57	1.63	....
	*Osborn	246.50	346.55	138.42	208.13	1.41	....
	Park	465.00	502.00	374.94	127.06	1.08	....
	Perry	370 50	445.80	274.14	171.66	1.20	....
	*Pilgrim	267.25	564 52	385.58	178.94	2.11	....
	Plymouth	342.80	382 15	330.32	51.83	1.11	....
	*Porter	585.00	1,288 25	549.91	738.34	2.20	....
	*Reservoir	228.30	574.00	266.90	307.10	2 51	....
	*River	486.45	2,916.52	492.06	2,424 46	6.00	....
	Rockwell	345.50	405.80	260.77	145.03	1.17	....
	Sands	420.60	435.35	417.14	18.21	1.04	....
	*Second	501.80	1,405.76	167.00	1,238.76	2.80	....
	Seventh	145.80	154.60	89.34	65.26	1.06	....
	*Spruce	2,975.73	23,741.77	2,863.69	20,878.08	7.98	....
	Sydney	260.00	427.65	. . .	427.65	1 64	....
	*Sydney	128.00	270.38	200.16	70.22	2.11	....
	*State	570.50	802.18	659.47	142.71	1.41	....
	*Tuttle	567.00	1,432.68	627.19	805.49	2 53	....
	Valentine	396.50	378.77	348.59	30.18	.96	....
	*Walden	440.00	1,111.78	303.35	808.43	2.53	....
	*Walden	1,961.30	4,854 99	1,753.32	3,101.67	2.46	....
	*Warren	493.25	1,086.21	396.76	689.45	2.20	....
	Webster Avenue	569.90	981.75	660.94	320.81	1.72	....
	Willard	543.70	1,772.00	419.10	1,352.90	3.26	....
	William	103 00	288.45	. . .	288.45	2.80	....
	*Willow	100 20	220.65	58.87	161.78	2.20	....
	*Wyeth	627.00	1,078.30	528.02	550.28	1.72	....
		37,240.51	$183,823.56	$30,846.63			
	Charles	369.15	private.				
	Distillhouse	294.00	}				
	Frisbie Place	908.00	} private.				
	Green	64.50	}				
1875.	Allston	220.70	$250.25	$215.05	$35.20	$1.13	‡
	Banks	243 70	279 77	254.47	25.30	1.15	
	Cambridge	2,167.82	9,103.33	1,634.20	7,469.13	4.20	
	College Wharf	274.00	483.48	. . .	483.48	1.76	
	Elmer	424.38	494.06	361.28	132.78	1.16	
	Flagg	185.42	212.00	158.63	53.37	1.14	$0.43
	Franklin	346 90	734.75	237.13	497.62	2.12	.34
	Garden	163.00	187.22	164.38	22.84	1.15	....
	Green	328.80	380.79	295.10	85.69	1.16	.45
	*Hancock	240.20	1,445.28	177.20	1,268 08	6.02	.51
	Inman	1,112.90	2,188.62	1,332.91	855.71	1.97	....
	*Jay	742.75	4,468.76	957.10	3,511.66	6.02	.51

* Average cost of system.

† Assessments made according to "fifty-cent rule." The "assessment ratio" is not known, but can be easily found.

‡ This column shows the average assessment per foot of length of both sides of sewer, including street-crossings.

Date.	Street.	Length in Feet.	Cost.	Assessed.	Balance.	Cost per Foot.	Assessment Ratio.
1875.	*Kinnaird & private land	797.20	$1,186.55	$63.00	$1,123.55	$6.02	$0.51 †
	Kinnaird	677.75	1,081.26	464.03	617.23	1.60	.34
	Lakeview Avenue	1,424.55	2,778.66	. . .	. . .	1.91	.....
	Main	637.50	1,934.67	848.84	1,085.83	3.03	.67
	North Avenue	362.90	563.68	. . .	563.68	1.55	.....
	Putnam Avenue	253.10	461.86	276.60	185.26	1.82	.....
	Putnam Avenue	505.50	583.80	476.12	107.68	1.15	.....
	Seventh	140.00	161.90	132.96	28.94	1.16	.47
	South	121.00	137.29	80.16	57.13	1.13	.33
	Sparks	523.60	931.30	728.65	203.25	1.78	.....
	Spring	151.70	169.44	43.43	126.01	1.12	.....
	Tremont	278.35	337.16	288.38	40.78	1.21	.52
	Wallace	708.85	1,298.04	1,011.37	286.67	1.83	.....
		13,032.57	$31,853.92	$10,200.99	$21,652.93		
	Bristol	132.00	} private.				
	Distillhouse	206.00					
	Fifth	753.00					
	Seckel	192.90					
1876.	Allston	112.50	$117.98	$105.60	$12.38	$1.05	$0.47
	Bay	198.00	401.60	14.69	386.91	2.03	.03
	‡Binney	6,249.88	139,167.94	6,052.41	133,115.53	22.27	.48
	Chauncey	66.50	76.34	. . .	76.34	1.15	.....
	First	149.00	269.45	. . .	269.45	1.81	.....
	Florence	522.90	1,047.38	673.60	373.78	2.02	.64
	Franklin	394.80	441.06	252.77	188.29	1 12	.32
	Franklin	65.00	53.15	. . .	53.15	.82	.....
	Garden	200.00	228.40	176.83	51.57	1.14	.44
	*Madison St & Concord Avenue	600.00	929.90	712.94	216.96	1.55	..... .59
	Mt. Auburn	195.50	173.52	141.06	32.46	.89	.36
	Portland and Plymouth	565.50	1,174.40	745.08	429.32	2.08	..... .66
	Prescott	314.00	274.76	231.84	42 92	.87	.37
	Putnam Avenue	770.80	1,254.75	968.34	286.41	1.63	.63
	Sparks St. Court	515.00	566 06	466.85	99.21	1.10	.45
	Western Avenue	302.20	2,391.00	. . .	2,391.00	7.92	.....
		11,221.58	$148,567.69	$10,542.01	$138,025.68		
	——— Place	79.50	private.				
1877.	*Acacia & Hawthorne	467.04	$409.82	$275.86	$133.96	$0.88	$0.30
	Allston Court	131.00	95.88	. . .	95 89	.73	.....
	Brattle	179.50	154.01	99.32	54.69	.86	.28
	*Brattle and Church	678.00	603.04	397.28	205.76	.89	.29
	Bridge Street (outlet)	105.00	4,850 82	. . .	4,850.82	46.20	.....
	Chauncey	562.00	431.81	189.72	242.09	.77	.17
	*Lake	205.00	127.00	128.24	1 24	.62	.31
	Lowell	505.30	517.40	. . .	517.40	1.02	.....
	Niagara	100.50	71.25	. . .	71.25	.71	.....
	North Avenue	244.00	145 86	. . .	145.86	.60	.....
	Portland	420.00	733.96	430.00	303.96	1.75	.51
	Prison Point	398.00	415 92	. . .	415 92	1.04	.....
	Prospect	151.50	136.35	81.02	55.33	.90	.27
	Prospect	92.90	72.37	40.92	31.45	.78	.22
	Sparks	856.90	659.47	509.56	149.91	.77	.30
	Third	323.00	346.04	192.25	153.79	1.07	.30
	Webster Avenue	28.50	25.02	. . .	25.02	.88	.....
	Western Avenue	1,419.19	8,086.15	. . .	8,086.15	5.69	.....
	William	101.00	70.85	65.40	5.45	.70	.32
		6,968.33	$17,952.73	$2,409.57	$15,543.16		
	Avon Place	148.40	} private.				
	Salem	125.80					
	Shawmut Avenue	258.00					

* Average cost of system.

† This column shows the average assessment per foot of length of both sides of sewer, including street-crossings.

‡ Exclusive of ballasting, dredging Broad Canal, and grading Binney Street.

Date.	Street.	Length in Feet.	Cost.	Assessed.	Balance.	Cost per Foot.	Assessment Ratio.
1878.	Howard	432.50	$280.90	$304.85	. . .	. .	....
	Somerset	155.50	103.92	103.32	. . .	. .	....
	Mt. Vernon	576.60	398.13	455.50	. . .	. .	....
	Eighth	162.00	94.94	126.57	. . .	. .	....
	Douglass	200.00	102.45	90.80	. . .	. .	....
	Fourth	146.50	94.33	. . . .	. . .	. .	....
	Hastings Square . .	103.00	82.62	62.50	. . .	. .	....
	Bristol	199.00	125.59	57.65	. . .	. .	....
	Lexington Avenue .	153.20	183.74	198.50	. . .	. .	....
	Kirkland	548.00	597.65	516.59	. . .	. .	....
		2,676.30	$2,064.27	$1,916.28	. . .	$77.10	....

Table showing Cost of Sewers constructed, and Proportion assessed, for each Year, 1857 to 1870, as obtained from Preceding Tables.

Year.	Length in Feet.	Cost of all Sewers.	Cost of Sewers Assessed.	Amount of Assessments.	Percentage of Cost Assessed.
1846-49 . .	. . . . .	$3,505.51	$3,505.51	$3,227.98	. .
1850-56 . .	. . . . .	47,657.42	47,657.42	35,236.52	. .
1857 . . .	. . . . .	13,155.65	13,155.65	9,486.52	. .
1858 . . .	. . . . .	2,612.51	2,612.51	1,958.15	. .
1859 . . .	. . . . .	9,092 16	9,092.16	6,824.49	. .
1860 . . .	. . . . .	8,407.21	8,407.21	6,248.33	. .
1861 . . .	. . . . .	2,348.00	2,348 00	1,847.44	. .
1862 . . .	. . . . .	339.12	339.12	254.34	. .
1863 . . .	. . . . .	5,280.00	5,280.00	3,848.33	. .
1864 . . .	. . . . .	1,196.00	1,196.00	897.00	. .
1865 . . .	. . . . .	1,304.19	1,304.19	978.13	. .
1866 . . .	. . . . .	5,457.92	5,457.92	4,169.86	. .
1867 . . .	. . . . .	4,420.52	4,420.52	3,315.84	. .
1868 . . .	. . . . .	7,262.60	7,262.60	4,496.61	. .
1869 . . .	. . . . .	13,578.65	13,578.65	10,178.87	. .
		$125,617.46	$125,617.46	$92,968.41	74
1870 . . .	11,013.35	$22,943.93	$22.943.93	$14,632.81	64
1871 . . .	21,690 25	119,250.29	119,250.29	71,743.20	62
1872 . . .	18,074.59	65,919.72	65,919.72	26,649.68	40
1873 . . .	30,151.51	132.261.81	110,852.29	20,529.57	18
1874 . . .	37,240.51	183,823.56	180,957.29	30,846.63	17
1875 . . .	13,032.57	31,853.92	28,028.10	10,200.99	36
1876 . . .	11,221.58	148,567.69	145,777.75	10,542.01	7
1877 . . .	6,968.33	17,952.73	3,744.42	2,409.57	64
1878 . . .	2,676.30	2,064.27	1,969.94	1,916.28	97
1870-78 . .	152,068.99	$724,637.92	$679,443.73	$189,470.74	28
1846-69 . .	. . . . .	. . . . .	125,617.46	92,968.41	. .
1846-78 . .	. . . . .	Total . .	$805,061.19	$282,439.15	35

CITY OF CAMBRIDGE.

AUDITOR'S OFFICE, Aug. 1, 1879.

Alderman Wm. H. Whitney: —

SIR, — At your request, I furnish herewith a statement of the Funded Sewer Loan, as shown by the books of this office.

No.	Date of Issue.	Date of Maturity.	Denomination.	Amount.	Years to run.	Rate per ct.
136.	July 1, 1873.	July 1, 1903.	$1,000.00	$136,000.00	30	6
295.	July 1, 1874.	July 1, 1904.	1,000.00	295,000.00	30	6
144.	July 1, 1875.	July 1, 1905.	1,000.00	144,000.00	30	6
20.	Oct. 1, 1875.	Oct. 1, 1895.	1,000.00	20,000.00	20	6
29.	July 1, 1876.	July 1, 1896.	1,000.00	29,000.00	20	6
				$624,000.00		

In order to meet the payment of these bonds as they mature, the Ordinances require that there be annually appropriated and paid into the sinking-funds a sum equal to three (3) per cent thereof on all twenty (20) year loans, and a sum equal to one and one half ($1\frac{1}{2}$) per cent on all thirty (30) year loans.

Very respectfully,

S. E. CHANDLER, *Auditor.*

II. USAGE.

Practice of other Cities.

At the beginning of this examination your committee considered what measures it should take to ascertain the "practice of other cities and of towns in relation to the subject." At Providence, R. I., a special committee investigated the subject of sewer assessments in 1875 and 1876, and reported, publishing the answers it had received to certain inquiries submitted to the authorities of sixty-nine cities. From that report we were able to obtain some information on this portion of our inquiry. We deemed it best to address questions after the same method to many of those who thus answered in 1875, and to such as might have adopted a policy since that time. By this means we are now able to report information from seventy-nine cities and towns, eight only having neglected to answer our inquiries. The interrogatories we sent were as follows, and the answers appended are those which we answered as for this city and sent with the question as a guide to the information desired.

Questions relating to Sewerage.

1. Have you a system of public sewers, and how are they paid for?

Partly by assessment upon abutting estates, and partly from the general tax.

2. If in part from the general tax upon real and personal property, what proportion of the total cost is thus paid?

From one quarter to one half.

3. If a larger portion of cost for building trunk or other very expensive sewers is paid from the general tax, what is the rule you have adopted?

We have no rule; but our practice has recently been to pay nearly all the cost of such sewers out of the general tax.

4. Please state, if you can, whether the actual assessments upon property abutting will equal the balance remaining of the total cost after deducting the portion paid from the general tax; or, in other words, has your practice for a long term of years conformed to your rule, as given in answer to Question 2?

Our assessments will not equal such balance. Our rule was closely followed until 1870. Since that time, in assessing the cost of trunk sewers, we have failed to follow our rule. We have not assessed more than one quarter of the total cost of sewers completed since 1870.

5. What proportion of the cost thus assessed has been actually collected?

We have actually greatly reduced our assessments by new assessments, abatements, and refunds, but cannot tell how much.

6. Does your system of assessments meet with general satisfaction?

It does not.

7. What are the chief objections against your method of assessments?

It bears unequally upon our citizens, is changeable, and our practice seems unjust to personal property, since so large a part of the cost is actually paid from the general tax.

8. What changes would you or your authorities suggest as desirable?

The assessment of a proportionate share of three quarters of the cost of all sewers used upon the estates thus benefited. The method of ascertaining such proportionate share to be determined by the relative area and frontage of the estate to other estates bearing the burden.

9. If practicable, please furnish me a copy of the law or ordinance in relation to your sewer assessments.

Not practicable. We are now revising our ordinances for publication.

10. What criticism can you make to our suggestion in answer to Question 8?

SAMUEL L. MONTAGUE, *Mayor.*

CAMBRIDGE, MASS., June 19, 1879.

The first subject upon which we desire to show information collated from these replies is in answer to the following question: —

What is the practice of other cities in relation to the proportion assessed upon real estate benefited?

Summary of Replies.

Whole number replying to inquiries		79
Cities having no system of sewers		13
Cities having a system of sewers		66
Number paying for sewers out of general tax		13
Cities assessing benefit by some method		53
Number assessing and dividing whole cost	14	
Number having definite rule to assess three quarters	15	
Number having a rate per front foot equal to three quarters	10	
	39	
Cities assessing one half and less than three quarters	12	
Cities assessing less than one half	2	
		53

Thus it appears that, of the whole number of 66 cities,

Thirty-nine, or fifty-nine per cent, assess three quarters or more,
Twelve, or eighteen per cent, assess one half and less than three fourths,
Two, or three per cent, assess less than one half,
Thirteen, or twenty per cent, assess nothing.

Also that fifty-nine per cent of the whole assess three quarters, while forty-one per cent assess less than three quarters. The

two assessing less than one half of the cost of sewers are, Washington, D. C., which assesses one third, and Milwaukee, Wis., whose rule is to assess eighty cents, or less, per front foot of lots abutting. In order to bring the foregoing information to a home use, we state here that the standing of Cambridge, if attached to above list of fifty-three cities, would be at the bottom. Every one of them has a practice of assessing more than Cambridge, and most of them far more.

As we have not stated the average per cent of assessments heretofore in Cambridge, we insert it here as compiled from the foregoing tables of the City Clerk and City Engineer: —

Period.	Cost.	Assessed.
1870 to 1878	$679,443.73	$189,170.74, or 28 per cent.
1846 to 1869	125,617.46	92,968.41, or 74 „
1846 to 1878	$805,061.19	$282,439.15, or 35 „

Cambridge will rate, among her sister cities which assess at all, lower than the lowest, assessing for the last nine years a little over one quarter of the cost, while the lowest of the others is one third.

It should be remembered that we have not actually received anything like what we have assessed as above. Abatements and refunds of large amounts have been made, which will largely reduce the percentages given. The single abatement, &c., under order of Dec. 10, 1873, amounting to about $57,000, will reduce the twenty-eight per cent above given to nineteen per cent. We sought to ascertain whether or not, in the experience of other cities, similar large concessions had been made, and failed to find that in their practice they departed essentially from their rule.

Lest it may be said, to lessen the effect of the startling comparison thus drawn, that Cambridge is peculiarly circumstanced with reference to the necessary outlay for sewers, — as, for instance from tides and low, flat territory, — we state, that of the above thirty-nine assessing three quarters or more, about one half are on tide-waters; with reference to inland cities, remote outfalls and expensive cuts through hills and rocks will go to counterbalance any difference.

As an illustration of how little two of the largest trunk sewers have to do with the low percentage, we will show the percentage without them: —

Period.		Cost.	Assessed.
1870 to 1878		$679,443.73	$189,470.74, or 28 %
Bridge St.,	$68,858.84		
Binney St.,	139,167.94	208,026.78	6,052.41
		$471,416.95	$183,418.33, or 39 %

So that, if these two sewers be thrown out, the practice of the last nine years will place Cambridge only a little in advance of Washington, D.C., the lowest of the list.

We next inquire, —

What is the practice of other cities in dividing the proportion assessed?

The prevailing rule, among those which clearly state their practice, is to divide according to frontage; thus, of twenty-five, seventeen are so found. Ohio has a law limiting the assessment by this method.

Providence, R. I., and the town of Brookline, having given considerable attention to the subject, conclude it better to combine the two plans of frontage and area.

But the rate which these cities and towns have chosen in adopting this method is in strong contrast to the so-called "fifty-cent rule" of this city. Not one of the seventeen above mentioned has fixed a rate under eighty cents, and most of them are over $1.50 per front foot for each side of the sewer.

The city of Providence has had in practice for six years a rule of assessing $0.60 per front foot, and one cent additional per square foot running back not over 150 feet; this amounts, on a full-depth lot, to $2.10 per front foot. The town of Brookline, our neighbor across the Charles River, has just acted under the third section of the act of 1878, and fixed a rate of $0.75 per front foot and three fourths of a cent per square foot, within 100 feet of the street. This amounts, on lots of full depth, to $1.50 per front foot.

The practice in Boston was, for many years, to divide three quarters of the cost according to valuation. Within a few years they have adopted the area division of three quarters, with the allowance for corner lots proposed in our plan hereafter described.

Besides the cost of the lateral sewer, they have for several years divided a share of the cost of the trunk sewer upon the abutters of said lateral.

Cambridge Usage.

Before proceeding to present recommendations resulting from our consideration of the subject, we desire to recall the various principles in the practice of this city, and the duration of each. We divide this practice thus: —

1. The principle of ascertaining the *proportion to be assessed.*
2. The mode of *dividing this proportion.*

First. Proportion to be assessed.

Period.	Cambridge Practice.
For the twenty-four years before 1870.	Seventy-four per cent of total cost was the average proportion, and the yearly proportion was generally uniform.
For the nine years since 1870.	Twenty-eight per cent of total cost was the average proportion, and the yearly proportion was variable, the highest being 97%, and the lowest 7%.

Second. Mode of dividing this Proportion.

Period.	Cambridge Practice.
For four years, 1846–49.	According to valuation of estates benefited.
For twenty years, 1850–69.	According to area, one hundred feet deep or less.
For five years, 1870–74.	According to frontage, fifty cents per foot.
For three years, 1875–77.	According to area, one hundred feet deep or less.
For one year, 1878.	According to frontage, fifty cents per foot.

III. DISCUSSION.

We are instructed to recommend a plan for fixing a uniform and permanent rate of assessment. Surely the record of our

practice for thirty-three years does not exhibit a uniformity in the rate, and the changes of the last ten years show our methods are not calculated to be permanent.

The first question arises, —

Is it desirable to have a uniform and permanent rate?

Frequent changes in the methods of dividing the burdens of government are evidently conducive to inequality and injustice. It is desirable to secure a just, reasonable, and, as far as possible an equal distribution of the burdens imposed by constructing good and efficient sewers. Uniformity and permanency are both involved in an equal division. It is desirable to have a method which so commends itself to a man's sense of right, when he is unprejudiced, that when his pocket is affected by it he willingly submits. Nothing is more desirable to be known by parties petitioning for a sewer than what their share of the burden will be in money. We might add that there is nothing more undesirable than that a person in want of the privilege of drainage to his estate should be able to influence the choice of methods to be applied in fixing his share of the burden. The desirability being shown, we ask: —

Is it possible to have a uniform and permanent rate?

Perfect equality and uniformity we must not expect to secure, though that is no reason why we should not strive to approximate to it.

We answer that its possibility seems to us more assured now than ever before. The plan we present hereafter we think is worthy of trial. Your careful consideration of this plan we ask, confidently believing that it is founded on correct principles of justice, and will secure uniformity, and so commend itself to the approval of all that it will be permanent. It may introduce sweeping changes. What of that? Look at the record the city has made, and see if such changes are not necessary. It will change the methods which have grown upon us incident to liberal expenditure, but it will re-establish the methods of twenty-four years of prudent and economical management. No changes are undesirable or unjust which supplant extravagant

methods by prudent ones. The question of possibility will be answered further on in this report. We now ask, —

Is it a good time to introduce new methods?

We answer, It seems to us the times demand of us just this inquiry and just this reform. It is the time of small expenditure in sewer construction. We are probably on the eve of times tempting to much larger expenditure. There are sixty-one miles of sewers now built, and eighty miles of streets now in use, with vast areas unimproved, in this city. The demand of the times is for economy. Next to small expenditure, as a measure of economy, come improved methods of dividing the necessary expenses. Some may say, Why raise this question now, when no sewers have been reported constructed and ready for assessment? But we say, It is a good time to determine this matter for that very reason, as no personal interest can come in to interfere with a full, free, and thorough consideration of the true interests of our citizens. Had the prevailing plan of 1869 been adapted to the distribution of the burden of large sewers, before the North Avenue and Oxford Street expenditure had been entered upon, there would have been to-day a better showing than by the figures reported. That discussion was not free from the pressure of interested parties, and their numbers were too large, and their influence too great, to permit the application of new methods to receive such unbiassed consideration as to command the acquiescence of all.

Having emphasized the changeable and unequal methods of the past, shown the desirability and possibility of more uniform and permanent principles, and proved that the present is a good time to undertake such changes as may be necessary, we propose to consider, —

I. *Why the interests of the city demand a change*, viz.: —

First. *To return to the custom of former years, and assess upon parties benefited three quarters of the cost of sewers.*

Second. *To distribute this proportion upon all parties benefited when they receive the benefit, keeping in mind that a large sewer is made large because it is designed to benefit a large number.*

To adopt these changes will bring us nearer in accord with other cities. The first inquiry, in seeking comparison between cities, is often, What is their annual rate of taxation for general municipal expenses? These changes will tend to give us a more favorable standing, inasmuch as they will reduce the yearly rate on a thousand. There would be fewer sewers petitioned for if parties seeking them knew that the larger part of the cost was to be paid by themselves.

The personal property of the city will be relieved of an unjust and onerous tax, and personal property is a species of property we should encourage to come into the city, and not a kind we should drive away.

We next pass to consider, —

II. *How we shall be any better off with this proposed system than we were before.*

At this time we must point out the faults of our previous system: —

1. The practice of twenty-four years was right, in making the assessment cover three quarters of the cost; but it was not elastic enough to meet the cases of varying sizes of sewers necessary to be constructed. All sewers are, and undoubtedly our sewers always have been, planned in some degree. They are in systems, having laterals, trunks, and outfall.

There is, ordinarily, no reason for building a sewer larger than twelve or fifteen inches in diameter past a person's premises, except that of accommodation to those whose estates lie above his, and whose sewage must pass his door. Here is one man with a thirty-inch sewer, and there is another with a twelve-inch sewer. Plain justice requires, as between these two, that the person having the large sewer should not be assessed for three quarters of its cost, and the other for three quarters of the small one. But this has been the principle of division in this city, except during the prevalence of the remote assessment plan, and also of the "fifty-cent rule." The result has been that some have been assessed, as before shown, five and six times what other estates of the same size and value have been. What we propose will lessen the charge upon the abutters of the large or medium-sized trunk, by that portion of the expense

caused by its size and its depth, which is of no benefit to them; and will carry it over to increase the charge upon the abutters of the small-pipe sewer, built near the surface of the ground, but which will be useless without the trunk. Absolute equality is perhaps impossible; but it seems to us that if either should pay more than the other for the same benefit, it is the one who is situated farthest from the outlet.

2. But it is, perhaps, a better standard to set up, that the benefit which we bring to the estate of the tax-payer is simply the privilege of sewerage to him, that is, his "cellar and land" is drained. The route by which we reach him is in our hands to determine, and is a matter of no consequence to him so long as it is efficient. His interest is no greater in the pipe in front of his land than in the trunk sewer farther down: either is necessary to reach him with the benefit, and both must be kept efficient to "drain his cellar and land." We rejoice to be able to say that recent legislation has taken this view of the case, and our powers are now ample, whereas before they were in doubt.

How shall we be better off for the change?

3. Our rule will be better than the "fifty-cent rule" because that cannot be permanent.

4. It does not divide the cost as between the city and the parties locally benefited, in the proportion which has received the approval of a great majority of other cities and towns about us.

5. It places too large a burden upon personal property. It will increase our debt also, and defer the payment of the debt we already owe.

6. It is not based on any consideration of the cost involved in construction.

7. It would be difficult to prove, if called in question before the Supreme Court, that it was just and reasonable.

8. It might have been equitable applied to the period when, with a population of 25,000, we were building sewers costing under $2.50 per foot, and on an average much less. The average cost of sewers built since 1870 has been $4.76 per foot, and we have yet to build many large sewers.

If the introduction of the "fifty-cent rule," in 1873, was meant to compromise a large number of troublesome claims, and the

suits growing out of them, to bring a large amount of money into the treasury, to quiet discontent and appease excited citizens, it is not our province to criticise the purpose in view; but if it be regarded as establishing a precedent to govern future assessments, we must condemn it as not worthy to be followed.

The plan may have originated from the average of forty-four cents "per linear foot of sewer" derived from the City Clerk's table of 1872, and by a further assumption that six cents additional, or fifty cents in all, would result in nearly the same proportion of cost being assessed as before. The length of the lots assessed by the "fifty-cent rule" in any street will be less than the length of the sewer by the number and width of the street-crossings and corner-lots previously assessed. We estimate that this difference will be at least fifteen per cent.; consequently, a sewer costing eighty-five cents per running foot, on an average street, will be wholly paid for by the "fifty-cent rule." Therefore, in discussing this rule, we may state the rule to be as follows: —

The real and personal property in the whole city shall be taxed to pay all the cost of the larger sewers. Eighty-five cents per running foot shall be the average limit of sewers thus paid for; the abutters shall pay fifty cents for each foot of frontage on the sewer. Stated in this way, we may compare the rule with other cities. Several assess, as shown above, all which cost less than $4.00 per foot, and tax for the remainder; but none fix the limit below $1.50.

III. This raises the inquiry, —

Ought trunk sewers to be assessed at all; and if not, what limit shall be fixed?

Trunk sewers are so called because they bear the same relation to other sewers that the trunk of the tree does to its branches. In cities on tide-water, having cellars in marsh or low lands and wharf property to drain, the sewers are "tide-locked," that is, the incoming tide fills the outlet and the lower portions of the sewer itself, unless prevented by tide-gates; consequently, no sewage can be discharged during this period,

occurring twice each day. If cellars (which includes the house drainage) were not to be drained, the sewers could be built near the surface of the ground, and might discharge on or near the top of the tide, and thus avoid their being "tide-locked" to so great an extent. Sewers, as universally built in this country, by what is called a single system, are designed to carry the largest amount of storm-water liable to fall in every severe shower, and the house or cellar drainage.

This purpose, as well as the knowledge that no sewage can be discharged during several hours each day, and the possibility that shower and tide may both come at the same time, causes the "tide-locked sewers" to be made large.

The chief elements in the expense of the sewers in Cambridge are, 1st, because they must be deep, and, 2d, because they must be large; and in both these respects the great expense is due to the fact that house-drainage must be provided for. Their necessary size to carry storm-water only would not be so great an expense if less deep by several feet. Further, storm-water sewers would only need to be built to the foot of the declivities, to which the surface water might in many cases be carried on the surface of the ground; and thus a large outlay in length of sewers is caused by the design to connect each person's house or house-lot with the sewer system by a branch in front of his premises.

Thus, we have increased cost from size, depth, and length, because the local interests of real estate need ample drainage facilities for cellars of houses. We might add to this, that this interest is first to press its claims in a new district, and ought to be answered long before the surface water need be carried to the sea.

In such cases, the largest outlay is at first. For we must build the "trunk" first, and in all probability, if assessed equitably, be compelled to bear the loss of interest for a long time, before recovering a due share from parties benefited.

Of course the public interest in its sewers is something, and how shall it be ascertained? As a simple problem of area of surface drained, we should arrive at a result in this way: —

The streets required to improve for residents a city's territory, when fully developed, will consume one third of its area; therefore, the maximum share of expense on account of surface water is one third to the city for its streets, and two thirds to

owners for private lands. The general public interest in cleanliness of soil and purity of air and water is worthy of consideration.

After what has been shown above, it will not, we think, be disputed that house-drainage contributes, as its share of expense, five twelfths of the cost, and the surface drainage six twelfths of the cost, leaving for public general good one twelfth of the cost. Adding to the public interest of one twelfth the one third of area for surface water for streets, or two twelfths, we have for total general public benefit three twelfths or one quarter, and for private benefit nine twelfths or three quarters.

This practice of assessing three fourths is suggested, so far as the city of Boston is concerned, by a provision in Chap. 48, Gen. Stat., and has been followed by that city for many years. Providence and Newport, R. I., also act under similar statutes. Cambridge and many other cities adopted it, and while Cambridge has so sadly abandoned it, others have steadfastly followed it. We propose to return to this just rule.

The case might arise when, with reference to some trunk sewers, it might be well to tax more than one quarter of their cost upon the people in the general tax; but we are convinced that if the trunk be large or expensive because it furnishes an outlet for many laterals, it should be assessed.

If the case be viewed the other way, and we are called upon to meet the second question, "What limit shall be fixed?" we are at a loss to know. We cannot fix the limit at which a sewer ceases to be a trunk sewer in the sense used herein. Sewer systems are of different extent: what is a main trunk in one case may be no larger than a main lateral in another and more extensive system. We conclude, therefore, that trunk sewers ought to be assessed, and if not, a limit could not easily be fixed.

IV. *Proposed Plan.*

By our plan the difficult questions discussed above will not arise, for the trunk benefit will be ascertained and put where it belongs.

The rule is designed to be permanent, follows the three-fourth-assessment method, is based directly on actual cost before the assessment is laid, recognizes the justice of assessing the real

estate in the district drained for most of the cost of the sewer, and, above all, is elastic to meet the varying sizes of sewers constructed, from the smallest to the largest.

Having now shown how the faults of the old methods are corrected by the proposed one, it remains to view the question in its legal aspect.

The absence from Chap. 48, General Statutes, and its amendments, down to the year 1878, of any recognition of the necessity of building sewers in systems with increasing sizes and depths, has caused much of the trouble arising from the methods of assessing heretofore prevailing in this city. Judges Hoar and Curtis, in their opinion in 1871, hint at the existence of the authority to assess an owner for a distant trunk sewer when the connecting sewer is built which brings the benefit to his estate; but as the question answered by them did not cover the case, it cannot be called their fixed opinion.

The town of Brookline, having a large trunk sewer, seven feet in diameter, nearly constructed, applied to the Legislature for authority to estimate the cost of sewers intended to be built to complete its system, and fix therefrom a uniform rate of assessment. The result was the passage of the following: —

"*Chapter* 232. *Acts of* 1878.

"An Act to amend Chap. 48 of the General Statutes, relating to Sewers and Drains.

"*Be it enacted, &c., as follows:* —

"Section 1. Sect. 4 of Chap. 48, of the General Statutes is hereby amended by inserting before the words 'to be ascertained' the words 'and of the charge, not already assessed, of making and repairing other main drains and common sewers through which the same discharges.'

"Sect. 2. Plans and descriptions of all main drains and common sewers belonging to any city or town, with a true record of the charges of making and repairing the same, and of all assessments therefor, shall be kept in the office of the clerk of such city or town.

"Sect. 3. The City Council of any city and the legal voters of any town in a meeting called for that purpose, may adopt a system of sewerage to apply to any part or the whole of the territory of such city or town, and may provide that the assessment authorized by said Sect. 4 shall be made upon the owners of the estates embraced in such system, by a fixed uniform rate, based upon the estimated average cost of all the sewers therein,

according to the number of feet of frontage their estates have on any street or way where a sewer is constructed, or according to the number of feet of area their said estates contain within a fixed depth from such street or way, or both, according to such frontage and area, which rate, when adopted, shall not be changed.

"SECT. 4. This act shall take effect upon its passage.

"Approved May 8, 1878."

This Act has been amended as follows: —

"*Chapter* 55. *Acts of* 1879.

"AN ACT TO AMEND CHAP. 232 OF THE ACTS OF THE YEAR 1878, RELATING TO SEWERS AND DRAINS.

"*Be it enacted, &c., as follows:* —

"SECTION 1. Sect. 3 of Chap. 232 of the Acts of the year eighteen hundred and seventy-eight is hereby amended by adding at the end thereof the following words: '*provided,* however, that in respect to any estate fronting upon such street or way, which, by reason of its grade or level, or for any other cause, cannot be drained into such sewer, the selectmen shall not ascertain, assess, and certify the assessment thereon, or give notice of such assessment to the owner of such estate, until the incapacity of such estate to be drained into such sewer has been removed.'

"SECT. 2. This Act shall take effect upon its passage.

"Approved Feb. 21, 1879."

Your committee, early in its examination, was in consultation with the City Engineer and the Clerk of Committees. It sought advice from the City Solicitor as to the powers of the Mayor and Aldermen and City Council under these acts. The City Solicitor was clearly of the opinion that the Legislature had conferred upon the Mayor and Aldermen the power to assess a proportional part of the cost of trunk sewers upon persons hereafter benefited by the construction of sewers discharging through them, provided, however, that the aggregate amount of assessment should not exceed the cost.

With considerable care he examined the question whether, by previous ordinance, order, or resolution, the city was debarred from the exercise of this newly acquired power, and he has advised us that "he was of the opinion that there was nothing in any past ordinance of the city, nor (so far as he was aware) in any joint order or resolve of the City Council, which would prevent the application of this law to any sewer heretofore built."

The City Engineer stated that there were at present in the city eighteen (18) drainage districts, or existing systems (counting the Fort Washington District). The areas of these districts vary from eight (8) acres to six hundred (600) acres. Each has an outlet into tidal water. The sewers were planned with varying sizes, according to the amount of sewerage matter it was designed should pass through them, or according to the area of the district.

The plans for assessment, kept in the engineer's office since 1869, are drawn with care, and exhibit in detail sewers and their construction, the abutting estates, frontages, area, and owner's name. A full record is not kept in this office of the amount actually assessed. A record has been kept by the City Clerk and Clerk of Committees since 1846, and is now in the hands of the Clerk of Committees, in three volumes, showing the amounts assessed, street sewer, and owner's name, with other useful information from the year 1845 to the present time.

It will be noticed that by the existing laws there are *two ways of proceeding* in the future assessment of sewers, — the old way amended, and the new way.

The new way is set forth at length in the third section of the Act. Its design is to meet the requirements of a city or town just entering into the process of providing public sewers. First, a definite and permanent outlet. Second, a complete line of sewers with outfalls, intercepting sewers, trunk sewers, valley lines, mains, laterals, and head lines, must be definitely adopted. Third, a careful estimate of the cost must be made, with all its uncertainty as regards rock-cutting and foundations. Fourth, and following this, a definite, fixed, and unchangeable rate for assessment, according to frontage, or according to area, or both frontage and area, must be adopted by the authorities and applied to all parts of the district alike. This rate, when once adopted, shall not be changed.

The committee, after careful consideration, concluded it was not easy or desirable for Cambridge to proceed under this plan.

We next considered the other way, and deem it best adapted to a city which has proceeded as far as Cambridge has in providing public sewers. Its features are, briefly, to assess for a definite expenditure on a sewer in a street into which an owner can enter his particular drain, together with a proportional share

of what remains not assessed of the sewers through which the same discharges.

In order that all points on which we judged the board would desire definite opinions from the City Solicitor might be covered, we addressed the questions herein recited to him, and received the following replies: —

Question 1. Has the Common Council the authority by statute law to provide, in concurrence with the Board of Aldermen, that a part of the expense of constructing, maintaining, and repairing sewers shall be paid by the city? Has it the same powers to provide what part shall be so paid? Has it the same powers to provide what part shall be assessed, and to provide for any method to assist in securing such assessment? What are the limits of its power in this direction?

Answer. The City Council may, by concurrent vote, provide by ordinance or by separate orders, from time to time, as cases arise, that a part of the expense of constructing, maintaining, and repairing main drains or common sewers shall be paid by the city, and may fix that part, and may from time to time change it at the will of the City Council.

Question 2. What new powers are conferred upon the Board of Aldermen or the City Council by Chap. 232 of the Acts of 1878, with reference to assessing for trunk lines already built?

Answer. By Statutes of 1878, Chap. 232, there was conferred upon the mayor and aldermen the power (not theretofore granted) to assess upon a person receiving benefit from the construction or repair of a sewer, in addition to his proportional part of such construction and repair, his proportional part of the charge, not already assessed, of making and repairing other main drains and common sewers through which the sewer into which he enters his particular drain, or by which he is benefited, discharges. Prior to this statute, no such power existed, and the only sum that could be assessed was the expense of the sewer constructed, or possibly the expense of the sewers constructed at the same time with that sewer and receiving its discharge.

Question 3. In view of the exercise of their legal powers by past City Councils, by ordinances or orders of assessment, &c., what limit is fixed to these powers by existing statutes?

Answer. I do not think there is anything in our past ordinances, and I am not aware of anything in any past orders of the

City Council or Mayor and Aldermen that would bar the city authorities of the right to assess upon persons benefited by any subordinate or branch sewer their proportional share of the expense of trunk sewers, not already assessed, through which the branch sewer may discharge.

Question 4. Can we act under Sects. 1 and 2 of Chap. 232 of the Acts of 1878, and ignore Sect. 3?

Answer. The City Council or Mayor and Aldermen may act under the powers conferred by the first two sections of Acts of 1878, Chap. 232, without adopting the third section, or being bound by its provisions.

Question 5. Under the Act, as a whole, can the Board of Aldermen or City Council, in building a sewer, determine it to be a part of a system, ascertain the average cost of sewers in the system, using the actual cost of those already built and estimating those to be built, and fix a rate accordingly? And what legal objections appear to such a course?

Answer. In estimating, or rather in ascertaining the proportional part of the charge of the construction or repair of a main trunk sewer to be assessed upon a person benefited by a branch sewer discharging into it, the assessing board may properly take into account the probable number of branch sewers which in the future, will drain through the same trunk.

I think the proportional part of a person so benefited may properly be reckoned upon the basis of the sewers to be constructed to discharge into the same trunk, and of the persons to be benefited by such sewers.

Such a basis cannot increase the assessment; in many cases would materially decrease it.

Question 6. Is the second section complied with by keeping in the City Hall, by the City Engineer, a record, examined and certified by the City Clerk, of the cost of sewers and amount assessed upon them?

Answer. If the city concludes to act under the two first sections of the statute before named, there must be kept in the City Clerk's office plans and descriptions of the sewers belonging to the city, with a true record of the charges of making and repairing the same, and of all assessments therefor. And it would be convenient to have such charges and assessments in gross minuted upon each plan.

Question 7. In the case of an assessment upon estates abutting on a sewer, the cost of which was less than the assessments levied, is it lawful to charge the excess as an assessment for connecting sewers, and direct the City Engineer so to do, in complying with Sect. 2?

Answer. I think that, in carrying out the provisions of the statute aforesaid, each assessment should show upon its face what part is for the construction of the branch sewer. I do not see how the plan can otherwise be carried out.

We submit his written opinion in an accompanying paper, marked "A."

IV. RECOMMENDATIONS.

FIRST RECOMMENDATION.

Your committee decided to recommend the acceptance of the proposed plan by both boards of the City Council, — that the old plan of assessing three fourths of the cost of sewers, with such adaptation as shall meet the future requirements of the varying sizes of sewers, be re-established.

In so doing, we call attention to the fact that the authority of statute law still secures to the City Council the right to fix the proportion to be paid by the city. This authority has not been used by the Common Council since the repeal of the ordinance, May 26, 1874. It seems to us not only necessary but desirable that the Common Council should join this board in thus protecting the interests of the tax-payers.

SECOND RECOMMENDATION.

We further recommend that we act under the first two sections of Chap. 232, Acts of 1878, in all assessments certified by us.

THIRD RECOMMENDATION.

To secure this, we recommend the passage of the ordinance hereafter incorporated in this report. The provisions of this ordinance we will briefly set forth, and the purpose they are designed to secure: —

First. To provide, under the statute, that the city's share of constructing and repairing sewers shall be one fourth, to apply to all sewers hereafter constructed, and to sewers already built which may become discharging sewers for such new sewers. These provisions are found in Sect. 1 of the ordinance hereinafter submitted.

Second. To provide in what method the City Engineer shall proceed in recording or perpetuating the record of the cost, repair, and assessment of all sewers, also the area and extent of territory designed by him or his predecessors in office to be drained by each sewer, and the sewers through which each sewer discharges. To prescribe that the board, acting in conformity with this ordinance, desires, as a preliminary step in ascertaining the proportional part to be certified as an assessment upon parties benefited, to have estimated and placed on a plan containing these records the following sums: —

1. The amount to be assessed for each sewer under the three-fourths rule of this ordinance.
2. The amount reserved to be assessed hereafter.
3. The balance or amount of benefit from present expenditure.
4. The amount of benefit from past expenditure.
5. The sum or total benefit recommended to be assessed, according to law, upon the owners named upon this plan.

These points are provided for in Sects. 2, 3, and 4.

Third. To provide that the City Engineer shall prepare and submit to the board a schedule, dividing the total amount of benefit according to a certain fixed rule, which seems best adapted to equalize the burden between estates of different sizes and shapes. This is provided for in Sect. 3.

The assessing board, having this information before it, can then proceed after a review of the figures of the City Engineer, by themselves or by a committee, if it be deemed desirable, to ascertain the proportional part to be assessed, and can certify to the same; then,

Fourth. It will be necessary to enter on the plan these assessments, with explanation of such variation from the engineer's list as will complete the record.

Fifth. To repeal Sect. 5 of the ordinance approved May 26, 1875.

We desire to call your attention to two features of this ordinance before submitting it. First, the aid sought from the City Engineer. This calls upon the proper officer, whose technical knowledge best fits him for the service, to point out, by the use of the process provided for him by the City Council, a reasonable and just division of the cost of sewers among persons benefited. Having, by ordinance, fixed the method, and prescribed that he shall record each step by which he reaches the fixed result, his work is subject to review by the assessing board and all others interested. As the process prescribed is largely a mathematical one, there is need that we avail ourselves of the best expert advice. The city of Providence, R. I., and the town of Brookline adjoining us have both proceeded under rules similar to that provided for in Sect. 3, Chap. 232, Acts of 1878. The unchangeable rate fixed by them was ascertained by their engineer after a careful mathematical operation based upon estimated expenditure. Our process is simpler, but is to be repeated at every assessment. It is very much like the method pursued in Boston.

For many years their superintendent of sewers, who is a civil engineer, has been accustomed to divide the cost of trunk sewers over the whole district drained, and report a schedule to the Board of Aldermen.

The second feature of the ordinance is the method of dividing the benefit. The amount to be divided we consider as ascertained by the process already described. The City Council protecting the interest of the city, and the Board of Assessment providing the mathematical process, based on the cost, by which the result shall be obtained, have determined the amount. We believe that this amount should not be varied.

Having this fixed, the sum is to be divided among the parties named. And it is here that the judgment of the assessing board will be called into play. The schedule prepared by the engineer is to be obtained by a certain process based upon the area and frontage of each estate. Much has been said, and may be said, concerning the relative value of the two methods of assessing, viz., by front feet, or by square feet computed back to a one-hundred-foot line. We do not desire to enter into the discussion of their relative merits.

FOURTH RECOMMENDATION.

We recommend a combination of both, and it may be expected we shall satisfy in some degree the claims of both. We have this general suggestion to offer, — that no plan will be free from seeming inequality in some cases. The area plan will discriminate against lots with narrow fronts and great depths. The frontage system will discriminate against lots with wide front but shallow depth. It is plain, therefore, that the combination will equalize and correct this discrimination. It may add strength to the value of the combined method to state that the cities of Providence and Newport, R. I., and the town of Brookline are now assessing by it, and the former has had the method in operation since it was made compulsory by legislative enactment. The only other way of division used has been according to valuation. But the fourth of the total cost to be borne by the city, as well as the advance payments while waiting for assessments, is distributed upon the property in the city according to valuation. Adopting our combination method, the expense for sewers will be assessed by valuation, area, and frontage.

FIFTH RECOMMENDATION.

Your committee, after comparisons with the results upon lots of various sizes and shapes, and sharing the belief of others, "that the benefit of a sewer, while in a measure dependent upon the frontage, is much more dependent upon area," determined to recommend that the engineer, in preparing the schedule, apply the "frontage rule" and the "area rule," in the proportion of four parts for the former and six parts for the latter. The allowance proposed to relieve "corner lots," so as to assess the same area but once, furnishes a better rule to apply to all kinds of "corners," than exempting a certain length of the frontage.

This schedule is to be presented on the completion of a sewer, ordered to be assessed according to law, and whenever the Committee on Sewers and Drains determine to recommend one for assessment.

Having this schedule before it, the full board, or its committee, may pass upon each amount, and determine whether it is just and reasonable, and a "proportional part of the charge of making and repairing." If some are too small and others too

large, in their judgment, sums can be transferred from one to the other. Then nothing remains but to certify the assessment, and send the warrant to the Treasurer for collection.

It is important to add that the court has decided that a warrant for assessment, once delivered to the Treasurer, can never be recalled and a new assessment issued. Consequently, in considering petitions for abatement and for refunding, it should be borne in mind that all sums thus abated or refunded will increase the burden to be paid by the city, and make it more than one quarter.

SIXTH RECOMMENDATION.

Your committee further recommend the immediate collection in the City Engineer's office of all records of sewer assessments, and the preparation of a complete list of cost of construction and repair of all sewers, and the balance of such cost and repair not assessed, with such other records as seem to be necessary to carry out the provisions of this ordinance.

SEVENTH RECOMMENDATION.

We further recommend that the following Act be adopted: —

"*Chapter* 249, *Acts of the year* 1878.

"AN ACT RELATING TO THE APPORTIONMENT OF SEWER AND SIDEWALK ASSESSMENTS.

"SECTION 1. At any time within sixty days after notice is given of a sewer or sidewalk assessment on any real estate, if the owner thereof shall in writing notify the board making the same that he desires to have the amount due on said assessment apportioned, said board shall apportion the same into three equal parts, and certify such apportionment to the assessors of the city or town where such real estate is situate; and said assessors shall add one of said equal parts, with the interest due thereon, from the date of the apportionment, to the annual tax of said real estate for each of the three years next ensuing. And all liens for the collection of such assessments shall continue in force until the expiration of two years from the time the last instalment thereof is committed to the tax-collector; and all sewer and sidewalk assessments upon real estate, which remain unpaid after the time stated in the order making the same for payment thereof, shall draw interest from such time until paid.

"SECT. 2. This Act shall take effect upon its passage, but shall not be in force in any city or town unless adopted by the City Council of such city or the inhabitants of such town."

The plan we thus propose is similar to the present plan in Boston, as we understand it, and it is identical with that in its main features. Their method is an unwritten one, but is embodied in the judgment and practice of their Superintendent of Sewers, who has had much experience in determining a just and reasonable assessment, and has been very successful, as the freedom of that city from suits at law on account of assessments plainly shows.

EIGHTH RECOMMENDATION.

Your committee recommend the passage of the following ordinance: —

CITY OF CAMBRIDGE.

AN ORDINANCE IN RELATION TO THE PAYMENT FOR AND ASSESSMENT OF SEWERS.

Be it ordained by the City Council of the City of Cambridge as follows:—

SECTION 1. One fourth of the cost of making and repairing each sewer shall be borne by the city, and the remainder, together with a proportional part of the charge not already assessed, of making and repairing other sewers through which the same discharges, shall be assessed according to law, *provided* that the whole amount of assessments certified for such discharging sewers shall in no case exceed three fourths of the expense of their construction and repair; and *provided, further*, that no estate shall be assessed until it can be drained into the sewer.

SECT. 2. In order to assist the mayor and aldermen to ascertain the proportional part to be assessed and certified according to law, the City Engineer shall prepare and submit to them an accurate account of the cost of making and repairing each sewer hereafter constructed, and of any other sewer of which the mayor and aldermen, or the Standing Committee on Sewers and Drains of that board, shall request such an account, together with a plan for assessment, showing in detail the estates deriving benefit therefrom, with their frontages and areas (within one hundred feet of the street), and the names of the owners thereof. He shall show on said plan three quarters of the cost of said sewer; and, after delineating on said plan such system of sewers as, in his judgment, will eventually discharge into this sewer, he shall estimate and

enter thereon what proportion of the said three quarters of the cost should be reserved for assessment along such future sewers. He shall also enter on the plan a list of the sewers through which the said sewer discharges, with an estimate of its just proportion of the charge, not already assessed, of such discharging sewers; and he shall enter on the plan the balance remaining after deducting the said proportion reserved from the said three quarters of cost, and shall add thereto the said proportion of the charge of said discharging sewers. The sum thus obtained shall be designated prominently on said plan, "The total sum to be divided proportionally among estates benefited, according to law."

SECT. 3. He shall prepare and submit to the mayor and aldermen a schedule, dividing the total sum shown on the plan provided by Sect. 2 according to the following method: Four tenths of the benefit, according to the relative frontage of each estate on the street where the sewer is, and six tenths according to the relative area of each estate within one hundred feet of such street. The area of corner lots shall be measured to the line bisecting the angle formed by the street lines.

SECT. 4. The amounts assessed and certified by the mayor and aldermen shall be entered upon the plan prepared for assessment.

SECT. 5. Plans and descriptions of all main drains and common sewers belonging to the city, with a true record of the charges of making and repairing the same, and all assessments therefor, shall be kept in the rooms occupied by the City Engineer. Said rooms shall be, for the purposes of this ordinance, a part of the office of the City Clerk.

SECT. 6. Sect. 5 of an Ordinance in Relation to Sewers, approved May 22, 1875, is hereby repealed.

SECT. 7. Chap. 249, Acts of the year 1878, is hereby adopted.

V. CONCLUSION.

Your Committee, before closing this report, desires to record the unanimity with which it has proceeded in this investigation and reached the conclusions herein submitted. The report has been necessarily long, but, under the order "to report such facts and recommendations as shall enable this board to fix a uniform and permanent rate of assessment," we deemed

it necessary to collect all which would throw light upon the question, and point out or enforce the lessons to be gathered from the varied experience of the city. We could not select such as might strengthen a prejudiced view and at the same time deal justly with the true interests of the city. The necessary quotations from laws, ordinances, and orders will make the report worthy of preservation. The question discussed demands fair and earnest study. It is not to be decided with an object to justify what in the past may or may not have been best: it is to be determined with a view to the future policy of the city. We believe that a determination prevails among all citizens to make that policy one of prudence and economy. We think we have shown that reform in methods of sewer assessments is necessary: if so, the times demand it. It will be in vain to say that, most of the sewers having been built and assessed in this unequal, changeable, and unjust way during the last nine years, resulting in cheap sewers to many citizens, the rest of the community should be treated in the same way. It is in vain thus to say, let injustice continue to prevail because it has prevailed, and many were seemingly enriched. The times are new, and so long as the present debt hangs like an incubus upon property and prosperity in this city, so long will what was extravagant in act or method in the record of these nine years incline to the abandonment of those methods. Property improved by large outlays at the high prices of those years has shared largely in these cheap sewers, no doubt; but, even if held by the same parties since, the burden of a heavy debt, with its yearly tax for interest and sinking-fund account, has come most heavily upon such owners, and will continue to for years to come.

It will be startling to the citizens to know that $320,000 of the city debt is the result of thus furnishing cheap sewers by wholesale, for the total expenditure for sewers, assessed,

From 1870 to 1878, inclusive, was	$679,443.73	
Seventy-five per cent of which is		$509,582.80
The sum actually assessed was only		189,470.74
		$320,112.06

Therefore, if Cambridge had assessed a full, equitable proportion of cost, viz., seventy-five per cent, there would have been an increase in assets of $320,112.06.

This represents $320,000, increase of debt, and calls for

Yearly tax for interest at 6 per cent	$19,200
And for sinking-funds at 1½ per cent	4,800
Making a yearly burden of	$24,000

which caused $0.50 of the rate of $18 per $1,000 of last year.

We are trying to keep down the annual rate of taxation: here, surely, is need of reform for the same purpose. Less than $5 of the annual rate of $18 on $1,000 is the result of expenditure wholly within the City Council. We see, as shown above, that one tenth of this is now an annual burden upon us because of this unjust system.

The future, with no reform in the matter of sewer assessments, will add largely, perhaps, to this burden. *A considerable share of the* $320,000 *increase of debt above referred to may be assessed and collected from parties hereafter benefited* under the new law, and by the plan we propose.

Our sewer debt is now $624,000.

The annual care of sewers, with the cost of catch-basins and sewers not assessed, as made up from the Auditor's reports for the last nine years, is	$98,123.91
That portion of the cost of sewers assessed which was left for the city to bear	489,972.99
Total burden borne by real and personal valuation, and now represented by the sewer bonds, being seventy-six per cent of the whole	$588,096.90
Total burden locally assessed upon parties benefited, being twenty-four per cent.	189,470.74
	$777,567.64

We venture to assert that no other city can be found showing such a record as this, — *seventy-six per cent of the total cost, care, and repair of sewers put into the general tax.* When we remember that one third of the general tax is borne by the personal property, the injustice to this class of property is glaring, and calls loudly for reform.

Your committee confidently leaves its recommendations in your hands, hoping that it has succeeded in reporting "such facts and recommendations as shall enable this board to fix a uniform and permanent rate of assessment."

We desire to express our thanks to the city officials who have aided us, for their patience and courtesy in listening to our inquiries, and for their efficiency in obtaining for us information concerning a subject about which we knew so little at the commencement of the investigation, and we respectfully submit our report.

In behalf of the Committee on Sewers and Drains of the Board of Aldermen,

WM. H. WHITNEY, *Chairman.*

SEPT. 3, 1879.

NOTE. — The eighth recommendation was passed with the following amendments to Section 1: —

SECT. 1. Three fourths of the total cost of making each sewer hereafter constructed, together with a proportional part of the cost, not already assessed, of constructing other sewers through which said sewer discharges, shall be assessed according to law: *Provided,* that the total amount of all assessments certified for such sewers and discharging sewers shall not exceed three fourths of the cost thereof, nor more than three dollars for each running foot of said sewer; and, *provided,* further, that no estate shall be assessed until it can be drained into the sewer, and that no estate shall be assessed more than once for the same benefit.

The remainder of the cost of such sewers and discharging sewers shall be borne by the city.

REPORT

OF THE

COMMISSIONER ON WEST BOSTON, CANAL, AND PRISON POINT BRIDGES.

THE Commissioner for West Boston, Canal, and Prison Point Bridges, submits for himself and associate his Ninth Annual Report of matters pertaining to the West Boston and Canal Bridges, and his Fourth Annual Report on Prison Point Bridge.

West Boston Bridge.

The fences, draw, and buildings on this bridge have been thoroughly painted during the past year.

No extensive repairs have been made, but the bridge and its appurtenances are now in good order, and no extraordinary expense is anticipated to keep them so during the coming year.

Canal, or Craigie's, Bridge.

No change for the worse has taken place in this structure since the report of last year, and it is now in good condition; the woodwork of the superstructure and the buildings have been painted, and the ordinary repairs due to wear have been made.

The annual statement of Superintendent Smith, showing the amount and kind of freight carried by vessels to points on the river above this bridge, will be found appended.

Prison Point Bridge.

Attention was called in the report of last year to the importance of paving the street approach to this bridge on the Cambridge side; it is an improvement that the Commissioners hope to see accomplished during the coming year.

A new house for the superintendent was built this fall by Mr. J. W. Wilson, of Charlestown, from plans furnished by our Engineer. It is a neat and creditable structure, and cost $1,024.30.

The fences and all the wood and iron work of the draw have been thoroughly painted, and every thing pertaining to the bridge is in good order.

EZRA PARMENTER,
Commissioner for the City of Cambridge.

Number of times the draw in West Boston Bridge has been opened during the year.

December, 1878	89
January, 1879	7
February „	8
March „	26
April „	138
May „	241
June „	203
July „	258
August „	226
September „	138
October „	207
November „	141
Total for the year	1,682

CHARLES W. BLANEY, *Superintendent.*
JOHN McNULTY, *Engineer.*

Number of times the draw in Canal Bridge has been opened during the year.

December, 1878	234
January, 1879	28
February „	8
March „	76
April „	278
May „	444
June „	380
July „	424
August „	438
September „	378
October „	392
November „	398
Total for the year	3,478

A. W. SMITH, *Superintendent.*

Number of times the Draw in Prison Point Bridge has been opened during the year.

December,	1878	71
January,	1879	15
February	„	0
March	„	9
April	„	41
May	„	44
June	„	60
July	„	68
August	„	75
September	„	58
October	„	93
November	„	106
Total for the year		640

NATHANIEL E. STORY, *Superintendent.*

Statement of the amount and kind of freight which passed through Canal Bridge during the year ending Dec. 1, 1879.

Coal	183,228 tons.
Gravel	79,428 „
Stone	31,824 „
Iron	700 „
Hay	420 „
Brick	2,048,000
Lumber	2,172,000 feet B. M.
Wood	9,211 cords.
Lime	4,863 barrels.
Posts	4,800 pieces.
Piles	3,800 „

The expenses of the City of Cambridge for the care and maintenance of West Boston, Canal, and Prison Point Bridges, for the year, were as follows: —

Amount of appropriation		$7,000.00
Superintendents' salaries	$2,079.88	
Commissioners' „	500.00	
Fuel, gas, oil, water rates, &c.	1,106.59	
Amounts carried forward	$3,686.47	$7,000.00

Amounts brought forward	$3,686.47	$7,000.00
Sweeping, cleaning, and watering bridges . . .	682.27	
Painting bridges, including labor and materials .	631.27	
General repairs, paving, piles, &c.	524.98	
New house for draw-tender, Prison Point Bridge .	512.15	
Lumber and carting	274.03	
Iron-work and tools	207.60	
Total expenses		$6,518.77
Balance unexpended		$481.23

REPORT

OF THE

TRUSTEES OF THE CAMBRIDGE PUBLIC LIBRARY.

The ordinance of the city in relation to the Library requires that the trustees "shall present to the City Council, annually, in the month of December, a report of all their acts, doings, and proceedings, and a statement of the condition of the Library, the number of books added during the year, with an accurate account of all receipts and expenditures, together with any other information or suggestions they may deem desirable." In obedience to this requirement the Trustees submit their twenty-second Annual Report.

The most important act of the Board during the year was their petition to the City Council, praying that the title of the Library be changed from the "Dana Library," to that of the "Cambridge Public Library." The request of the Trustees was readily granted, and the result, we believe, will prove a perpetual advantage to the institution. The reasons which actuated the Board in this movement were briefly stated in their petition; but we repeat them here, in order that they may be placed permanently upon record.

In administering the affairs of the Library the Trustees learned that great misapprehension existed in the minds of many in regard to its character. Its connection with the government, and the rights of the public to the use of it, were not well understood. The title "Dana Library" was a misleading one. There were many who thought that the Library was private property. This was inferred from the name. Others that it was maintained from the income of private benefactions; and still others that it

was established by a citizen of Cambridge, whose name it bore, and that money was exacted for its use. Many refrained from resorting to it, deterred by one or the other of these mistaken ideas. The Board feared that errors of this sort would continue to prevail indefinitely, if means were not devised to counteract them, and set the public right. It was deemed necessary to make it thoroughly understood throughout the city that the Library was absolutely *public property*, and maintained, like the other branches of the government, wholly at the expense of the tax-payer, with but a single slight exception ;[1] that it was as free to all, under proper and necessary regulations, as any other department of the city corporation ; that it was as accessible to the child of the citizen as a public school ; and the citizen himself was as fully entitled to its privileges as he would be to the protection of the police force, or of the firemen, in case of need.

To effect this, no course seemed so practicable as to procure a change of name, and none appeared so likely to accomplish the object in view. The new title, "Cambridge Public Library," explains itself. There is no longer any fear of misconception as to its true relations to the government or to the people. And when a knowledge of these is firmly imbedded in the public mind, we feel hopeful that they will be recognized in the form of donations of money or books, or works of art for the adornment of the rooms, which will render the institution, in time, an honor to the city, and an important feature in our system of public instruction. For the public library and the public school should be made to co-operate and assist each other.

The course of the Board has already borne fruit; for the Librarian, in her annual report to the Trustees, remarks: "The year just closing has been the first of the Cambridge Public Library. The change of name has identified the library more closely with the city, and awakened a greater interest in its future, and a better kind of patronage."

The alteration in the name of the Library has met with general approval among those who were acquainted with its history. Some who were at first disposed to doubt the propriety of our course have, upon reflection, cheerfully acquiesced. A few were found who thought the action of the Board indicated indifference or ingratitude towards the memory of the eminent citizen whose

[1] This refers to the Fay legacy, which yields sixty dollars per annum.

name it bore. Such an opinion has no foundation. We would honor that memory, as of one who was, during life, greatly interested in the library, and who stood foremost among its benefactors; and, were he now among us, we do not doubt he would cheerfully assent to the new title, surrendering all personal preferences to the conviction that the original designation had become an obstacle to its progress and usefulness. The Trustees having perceived, during the previous year, that the rooms had become a resort for the young of both sexes, whose evident object was not so much to enjoy the privileges of reading and consultation of the books as it was to enjoy the society of each other, early in the present year procured the appointment of a special police officer, whose duty it is to maintain order, and break up the custom of lounging and dallying, which had become an annoyance to those who resorted to the rooms with proper motives. This action of the Board has had the effect desired. The rooms are now more quiet, even when most thronged. And we hope to be able to impress upon all, especially small children, the necessity of retiring when they have procured their books. The compensation allowed to this officer is taken from our appropriation. This we regret, because our means for the purchase of books is by so much diminished; but no other way seemed to be open to us, to keep our rooms in an orderly condition.

We have said that the public library and the public school should be made to assist each other in the work of education. This library cannot be made more accessible than it now is to the youth of our city, for all are invited, above the age of fourteen years. The most numerous class that resort to it are school-children. And it is desirable to interest them in a higher standard of reading than that they are now disposed to select. Trustees can do nothing. But, by the mutual efforts of parents and teachers to this end, in time the children might be influenced to read books of a more useful character than they are now accustomed to do. Our Librarian reports that at least one half of them draw four, and many of them six books a week, and those mostly fiction and juveniles. All can see that they seek for amusement, and nothing else; and that such an all-devouring appetite can result in no permanent good. A similar state of things exists elsewhere. The question as to a remedy is much discussed by trustees, librarians, and school committees. It is

conceded that nothing can be done without the joint efforts of parents and teachers, the aid of the latter being more particularly necessary to accomplish beneficial results.

Mr. Charles Francis Adams, Jr., of Quincy, who is a trustee of the public library and a member of the school-committee in that town, prepared a paper on the subject of "The Public Library and the Public Schools," which he read to the teachers of the town in May last. This paper is at once brilliant, entertaining and instructive, and is well worthy the careful study of all who are interested in the matter under discussion. We give a short extract, which will furnish a general idea of what is proposed, in a much clearer manner than a statement of our own could do.

"Let us suppose," says Mr. Adams to his auditors, "that your school is studying history and geography. We will take those two branches and see what we could do in connection with them to introduce your scholars into general literature. History opens up the whole broad field of historical works, and also of biography; it is closely connected with fiction too, and poetry; geography at once suggests the library of travels. Now, we find that, of all forms of literature, there is not one which in popularity can compare with fiction. From the cradle to the grave, men and women love story-telling. What is more, it is well they do; a good novel is a good thing, and a love for good novels is a healthy taste; yet there is no striking episode in history which has not been made the basis of some good work of fiction. Only it is necessary for you to find that work out, and to put it in the hands of your scholars. Next in popularity to works of fiction are travels. After travels comes biography. Any girl will read the story of Mary, Queen of Scots; any boy the life of Paul Jones. Now, here is our starting point, and these fundamental facts we cannot ignore and yet succeed. Human beings have to be interested and amused; and they do not love to be bored, — and children least of all. If, then, we can instruct and improve them while we are interesting and amusing them, we are securing the result we want in the natural and easy way. There is no forcing. And this is exactly what any well-informed and older person can do for a child."

The Trustees of this Library would be very glad to assist in this work, by placing its books more freely at the disposal of

teachers, and allowing them to take, under proper regulations, as many volumes as they might think necessary to enforce and illustrate the various branches of study taught in the schools. The matter has been informally suggested to one of our number; and when it comes to us in a tangible form, we shall cheerfully aid to the extent of our power as trustees.

We give here the statistics of our operations for the year, as required of us by city ordinance.

Number of books issued in 1879.

First quarter	25,202
Second quarter	23,871
Third quarter	17,523
Fourth quarter	20,681
Total	87,277
Number issued in 1878	90,447
Decrease in 1879	3,170
Average per day	285
Largest issue in any one day (March 15)	641
„ „ in any week (that ending March 1)	2,397
„ „ in any month (March)	9,213

Accessions.

Additions by purchase	896
„ by gift	115
Total	1,011
Number of volumes at the close of 1878	10,923
Total now in the Library	11,934

Miscellaneous.

Number of books lost	10
„ „ „ re-covered (with paper)	6,825
„ „ postal cards sent for books overdue	2,612
„ „ subscribers to the Library	5,573
„ „ replaced, because worn out	185

Donors.

The volumes given to the Library were from the following sources: —

United States	2	F. W. Story	7
City of Cambridge	1	J. F. Marrin	10
State of Massachusetts	1	John Sargent	12
Macullar, Williams, & Parker	1	S. H. Sanborn	19
J. H. Laws & Co.	1	Moses G. Howe	8
Mrs. M. E. Sparhawk	1	L. R. Paige	2
Moses King	1	G. G. Wright	5
A. P. Morse	1	John S. March	42
Wm. Claflin, M. C.	1	Total	115

Reading Room.

There has been a daily average of visitors to this room of more than forty-five, the whole number for the year being 13,907.

Paige's History of Cambridge.

Number of copies reported in the hands of Trustees at the close of 1878	143
Number of copies disposed of in 1879, in exchange for similar works	6
Number of copies remaining in the hands of the Trustees	137

The Fay Legacy.

The annual income from this legacy — sixty dollars — has not yet been expended; but it will be in the manner directed in the will of Mr. Fay. The principal sum — one thousand dollars — remains, as at the date of our last report, invested in the city's note.

Receipts.

From sales of catalogues and waste paper	$30.66
From fines	127.05
Total	$157.71

The amount has been placed in the City Treasury.

Expenses.

Salaries, — Librarian, Assistants, Superintendent of Reading Room, Policeman, Janitor, Helpers, permanent and temporary	$2,244.74
Books, periodicals, and newspapers	1,227.51
Rent of rooms	1,000.00
Amount carried forward	$4,472.25

Amount brought forward	$4,472.25
Printing	327.40
Binding and repair of books	326.36
Gas	337.27
Stationery and paper for covering books	98.22
Advertising	33.00
Book-cases (three) and table	142.50
Ventilators, $11.00; stamp, $6.00; signs, $12.00	29.00
Matting and mats	49.27
Alterations and repairs	104.94
Ice, 2 years, $22.00; Cleansing mattings and repairing chairs, &c., $21.40	43.40
Sundries, — expressage, postages, and other petty expenses	29.51
Total	$5,993.12
Amount of appropriation	5,996.19
Unexpended balance	$3.07

There have been appropriated for the support of the Library, since it came into possession of the city, — nearly twenty-two years, — $58,236.75. During the same period, the amount expended for books was $16,799.07.

The City Council will see, from this statement, that it has required upwards of seventy per cent of the amount appropriated to meet the current expenses. The average of years has been about the same. As the Trustees cannot well reduce the expenses below the present scale, we shall need an allowance of $6,000, in order that we may be no more restricted than usual in our purchases for the increase of the Library. We, therefore, ask that the amount stated may be placed at our disposal for use the coming year.

Respectfully submitted.

SAML. L. MONTAGUE,
M. G. HOWE,
H. B. GOODWIN,
JOHN S. MARCH,
E. P. TUCKER,
ISAAC A. NAY,
Trustees.

REPORT

OF THE

TRUSTEES OF THE DOWSE INSTITUTE.

To the Honorable City Council of Cambridge:—

THE Board of Trustees of the Dowse Institute respectfully submits an attested copy of the Annual Report of its Treasurer, which contains an exact account of the receipts and expenditures of the Board for the year 1878–9.

The Course last season was given in Union Hall, and consisted of lectures by Wendell Phillips, Esq.; Rev. Henry Ward Beecher; Prof. W. H. Niles; Hon. E. B. Washburne; John Haberton, Esq., and Mr. Will. Carleton. Music by the Ole Bull Concert Company; Marie Roze Concert Company; Martinez Opera Company; Schubert Quartette; Young Apollo Club, and the Mendelssohn Quintette Club; Readings by Mr. J. J. Hayes, and Magic by Ernest Patrizio.

Respectfully submitted,

W. W. WELLINGTON,
SAM'L L. MONTAGUE,
GEO. S. SAUNDERS,
W. A. BULLARD,
FRANK A. ALLEN,
} *Trustees.*

CAMBRIDGE, December 31, 1879.

REPORT

OF THE

TRUSTEES OF THE BRIDGE CHARITABLE FUND.

The Third Annual Report of the Trustees of the Bridge Charitable Fund is herewith submitted.

For a full history of this fund, reference must be made to the City Documents for the year 1878. Its bank-book, with interest made up to January, 1880, shows that the total value of the fund is $1,973.80.

The amount of this fund, with its accruing interest, will, at the close of the next year, exceed the sum of two thousand dollars, and thereafter, in accordance with the intention of the donor, "two-thirds of the interest shall be paid over to the Overseers of the Poor," and the remaining one-third "added to the principal for ever."

The Trustees for the year 1879 can only second the "fervent wish" of their predecessors, that this worthy charity may be further increased from time to time by the gifts of other "liberal and philanthropic persons."

SAM'L L. MONTAGUE,
GEO. S. SAUNDERS,
JOSHUA G. GOOCH,
} *Trustees.*

REPORT

OF THE

TRUSTEES OF THE SANDERS TEMPERANCE FUND.

To the Honorable City Council:—

The Board of Trustees of the Sanders Temperance Fund presents herewith its Fifteenth Annual Report, it being for the financial year ending November 30, 1879.

The history of this trust fund of $10,000, which is a bequest of the late Charles Sanders, has been fully given in reports of former years. The amount was paid over to the City in the year 1864.

The amount was given for the promotion of temperance in our community, and the interest only is to be expended in payment for the services of a suitable missionary, whose duties shall consist "in reforming old drunkards and preventing young drunkards, and abolishing as far as possible the use of all intoxicating articles."

Mr. Alonzo Stewart, an earnest temperance reformer, has satisfactorily performed these duties for several years, having been re-elected by this Board in April last. To him has been paid quarterly, as salary, the interest of the fund, amounting to $600 a year.

His annual report is given herewith.

SAM'L L. MONTAGUE,
M. L. SMITH,
GEO. S. SAUNDERS,
W. H. DODGE,
MICHAEL CORCORAN,
} *Trustees of Sanders Temperance Fund.*

REPORT

OF THE

SANDERS TEMPERANCE FUND MISSIONARY.

To the Trustees of the Sanders Temperance Fund:—

GENTLEMEN,—In the providence of God another municipal year has come to an end, and with this ending comes to me, as your missionary, the duty of rendering an account of my doings so far as it can be done from a human standpoint.

The results of my labors cannot be made apparent to human inspection and decision, like those of the other departments of the City Government, for I have to do with the moral and spiritual, rather than the physical condition of those with whom and for whom I labor; therefore the true judgment must be deferred until that day when the angel shall stand upon the sea and upon the earth, and declare that time shall be no more.

In the discharge of the duties of my office, I have pursued nearly the same line of effort as in previous years, having always been desirous of the advice and counsel of the trustees. In prosecuting the work of reform among the intemperate, I have been at the Police Court nearly every morning, there to do what seemed, after personal examination into each case, for the best and highest good of the unfortunate ones and of the community. I have taken pledges of total abstinence from all intoxicating liquors from one hundred and thirty-eight (138) persons brought before the court for intemperance. In other cases, I have pledged myself to be responsible for their good behavior for such time as the court should appoint, thereby allowing fathers and mothers to return home to care for their families. In very few cases has this proved to be an unwise course.

My visits to the Almshouse, Jail, and House of Correction have been as usual. I have placed in the hands of the inmates of these institutions forty-four thousand and forty-two (44,042) pages of religious and temperance reading, all of which have, on solicitation, been given to me for that purpose. After the close of the chapel service at the House of Correction I have a Sabbath-school class, numbering now about sixty, composed of all the inmates of the women's department.

These, gentlemen, are in brief some of the methods which I, as your missionary, have pursued in carrying out the expressed wishes of the founder of this noble Christian enterprise, and in trying to fulfil your reasonable expectations.

And now, may the kind Heavenly Father grant to each one of us that wisdom which will enable us to conduct this benevolent enterprise so much more successfully in the future than in the past that soon may be realized in our goodly city the proclamation of the angels, "On earth peace, good-will toward men."

Respectfully submitted,

ALONZO STEWART,
Missionary.

CAMBRIDGE, December 30, 1879.

REPORT

OF THE

COMMITTEE ON GAS SUPPLY.

In Common Council, Dec. 23, 1879.

The Joint Special Committee appointed to consider and report upon the matter of the gas supply of this city would herewith

REPORT.

Your committee was appointed under the following order of the City Council, adopted Oct. 22, 1879: —

"*Ordered*, That a special committee, to consist of three members of this board, with such as the Board of Aldermen may join, be appointed to consider and report upon the gas supply of this city, — with authority to cause such tests to be made as they may deem desirable to determine satisfactorily the illuminating power, purity, and the amount and uniformity of pressure of the gas, — the expense of such tests to be charged to the appropriation for incidental expenses. The expense of the same not to exceed the sum of $50."

The subject of the foregoing order had been previously before the Board of Aldermen, the following order having been adopted by that board, Sept. 10, 1879: —

"In Board of Aldermen, Sept. 10, 1879.

"*Ordered*, That the State Inspector of Gas Meters and Illuminating Gas be requested to report to the Mayor and Aldermen whether the gas supplied in Cambridge is of the legal standard, and whether it is sufficiently well purified from sulphuretted hydrogen, ammonia, and carbonic acid."

On the 24th of September, the following report was received in response to the foregoing order: —

"Boston, Sept. 23, 1879.

"*To the Mayor and Board of Aldermen of the City of Cambridge:*

"*Gentlemen,*—In accordance with your request I have to report that I inspected the gas furnished by the Cambridge Gas Light Company, Wednesday, September 17, and found it to have an illuminating power of sixteen and two tenths (16.2) candles, when burned at the rate of five feet per hour. The legal standard is twelve (12.0) candles.

"I found the gas to contain nine (9.0) grains of ammonia, and eleven and three tenths (11.3) grains of sulphur, in one hundred (100.) feet. The gas was free from sulphuretted hydrogen and carbonic acid.

"The gas is of good illuminating power and is well purified, except that it contains a rather larger amount of ammonia than is desirable. Gas should contain no more than five grains of ammonia in one hundred feet, and of late years I have found, on the average, only about that quantity in Cambridge gas.

"I was unable to comply immediately with your request for inspection, as the Deputy Inspector of Meters is temporarily absent, and I was busy testing meters.

"Yours,

"Charles W. Hinman,

"*State Inspector of Gas and Gas Meters.*"

Your committee concluded, from these orders, that some dissatisfaction existed among our citizens. By an informal inquiry we learned: First, that many consumers of the gas of the Cambridge Gas Light Company complained of its variable illuminating power and pressure; second, that a general opinion prevailed that the price is too high; third, that many former consumers had for these reasons ceased to use the gas, in part or entirely.

In considering the subject of the investigation of the gas supply of the city, we judged it our duty to ascertain the justice of these complaints, where the remedy lay, and what the City Council could do in the matter.

We soon found that our duty in these respects was measured by the limited time at our disposal, and by difficulties in our way, which appeared beyond our power to remove.

The relations of the city to the Gas Light Company may be briefly stated, as follows: The city grants, or consents to, the occupation of the streets for the pipes of the company, and the repair of the same. Thus the company is enabled to carry out,

— so far as this city is concerned, — the purpose for which it was chartered; to wit, to sell gas to the citizens of Cambridge and Somerville. The citizens may buy this gas or go without. The Legislature has provided the city with certain methods of controlling this practical monopoly, and has reserved to itself the power to provide additional restraints.

While the use of gas, in many cases, is a necessity, and its supply may be spoken of as a monopoly, the manufacturers of this necessity are entitled to considerations often overlooked. The field of operations is a limited one, and the pipes are laid, in many cases, in streets far in advance of the existence of such a demand for the commodity as will insure a profit commensurate with the outlay. The investments in works and pipes are nearly valueless for any other purpose, or, in other words, their value as property rests wholly upon the need of the consumer for the gas. Various considerations of locality should affect the expectations of consumers. We ought not to say, because the Boston Gas Light Company furnishes its consumers with a better gas at a cheaper price, that therefore it is just for us to complain.

These questions of locality should be carefully weighed, and due allowance made for increased cost of material, long lines of pipe, with few consumers, limited supply, &c. With these considerations we entered upon our inquiry, and ask leave to report our action, and, so far as it relates to the result, the action of others.

In the outset, we desire to disclaim any fitness to consider the subject as experts in chemistry, or as competent investigators of the intricacies of gas manufacture.

Our position is rather that of the average consumer, divested of personal interests, seeking to form an intelligent opinion based upon the experience of those who, more competent than ourselves, have been over the course we think it best to pursue.

We did not deem it expedient to make the test as authorized. The inspection at the request of the Board of Aldermen furnishes all that an isolated test could give. The same State Inspector has been accustomed to test the Cambridge gas once or twice a year, and his results are given hereinafter.

The sources for obtaining the information which is necessary to form a comparison between our company and others, we found to be limited, while we have at hand statistics relating to other

companies, in published reports. The city of Boston, in January, 1875, by an order similar to that constituting this committee, established a paid commission, which spent a year and a half in its investigation, and made an exhaustive report. The first source of information sought by them was by addressing a request, with a series of questions, to "all of the principal gas companies in the United States," from many of which full returns were obtained. The published list embraces most of the companies in this vicinity, but does not include that of Cambridge. Concerning the replies, the report says: "Unfortunately we are not authorized to make public all of the items of information which we possess, since in most cases some of them have been given to us in strict confidence; but we have ourselves been enabled to make satisfactory comparisons and arrive at satisfactory conclusions."

Your committee addressed similar questions to the President and Directors of the Cambridge Gas Light Company, and after a personal interview between a sub-committee and one of their number, left the questions with an accompanying note, inviting replies, even though they should be given in confidence. The request was made, that, if all points desirable to be covered were not covered by the questions, the information should be given, so that a just judgment might be formed.

The attempt met with failure, and we have to report no answers to our proper inquiries. We received a cordial invitation to visit the works for information on the subject, and an intimation that our inquiries might then take a different direction. Inquiries which we then addressed to a number of cities and towns have been kindly answered, and we present hereinafter the facts gathered.

We regret that the principal source of information has not been readily opened to us and the citizens. This apparent unwillingness has destroyed our hope of obtaining a quick remedy for the ills complained of, namely: by the circulation of such facts as would show that our company is doing its duty by the citizens, and that consumers should be patient until time and constant improvement should bring relief. Failing, as we did, we thought it best to report such facts as we had obtained, as indicating how the matter might be further pursued, and what action should be taken.

It seems to us that inquiries should tend in three directions, namely: First, the illuminating power; second, the purity; third, the price of the gas. The illuminating power of Cambridge gas has been tested at the works once or twice each year, by the State Inspector, with the following results: —

1876 . . . . $16\frac{5}{10}$ Candles. 1877 . . . . 16 Candles.
1878 . . . . $16\frac{1}{10}$ Candles.

This evidence is, perhaps, the best we can report, as the inspections were made by the same official, and with the same standard of measurement. It is, nevertheless, unsatisfactory, because taken at the works instead of at a distance from them, and because there were not enough inspections made to obtain correct tests of the average quality. The inspector says, moreover, in his report for last year (1878), that the average result of his tests showed about one candle-power higher than the average of the previous year (1877). We find, on examining his list of tests, that 21 of the 26 companies show an increase of half a candle-power or more, while Cambridge shows an increase of but one tenth of a candle-power, and, with one exception, made the lowest increase on the list. This increase of candle-power for this year must not, however, be taken as indicating an improvement in gas, for the tests during the latter year were made with an improved burner, recording about one candle-power more than if the burner had been the same as that used in the former year. We may, therefore, suspect, from this circumstance, that the Cambridge gas was not as good in 1878 as in 1877. Comparing the test of 1878 with that of 1876, we find Cambridge gas tests four tenths lower in the latter year than in the former, and without exception out of 22 companies made a greater decrease than any, while 18 others show an increase for the same period.

The average candle-power in 29 cities and towns, in 1878, was $17\frac{1}{3}$ candles. By the recent special test, made in September of this year, of Cambridge gas, the report was $16\frac{2}{10}$, indicating no change in the quality for the better. We think these comparisons, incomplete as they are, indicate that Cambridge gas, in richness or illuminating power, has not kept pace with other companies in this State, many of which have far greater difficulties to contend with than those which, as we may conjecture, exist in Cambridge.

We quote, without comment, from the report of the Boston Gas Commission, the members of which visited cities and towns in all parts of the country, and made personal examinations. Speaking of these personal tests, it says (p. 48), —

"Of the companies in the vicinity of Boston, the gas in Roxbury and South Boston had a candle-power of 17½, that in Charlestown and Dorchester about 17, that in Cambridge only 14½, and in East Boston only 14¼ candles. The illuminating power of the gas in the last two places was lower than any other tested; but in regard to the East Boston gas, it is but justice to say that all the tests were made during a single week. In Cambridge, however, the gas was tested at various times and in different seasons, both alone and in connection with another expert. At no time should the illuminating power be allowed to fall below about 16 candles. The illuminating power is always within the control of the officers at the works, and CAN be kept always within the proper limits."

Closely allied with the candle-power in determining the quality of gas comes its *purity*, or its freedom from deleterious ingredients. On this point we purpose to say but little. We find that the reports show the presence of ammonia in excessive quantities in our gas at times.

"It fluctuates from day to day" greatly, so that, without repeated tests at regular intervals, no correct estimate can be made of its amount.[1] The interests of the consumer are affected by the presence of ammonia in gas. We quote from the Annual Report of the State Inspector of Gas and Gas Meters for 1875: —

"In a dry gas meter the gas is measured by means of leather diaphragms, and there is a registering apparatus to count the number of strokes of the diaphragms.[2] If the diaphragms are contracted, the consumer gets less gas than is registered.

"I am of the opinion that the diaphragms are contracted by ammonia more than by any other substance with which they are brought in contact. It follows that the ammonia should be almost wholly removed from the gas if the meters are to do good service."

Again, for 1876, he reports:[3] —

"I am of the opinion that one of the chief causes of meters being fast is the ammonia in the gas, and that when the gas is better purified from ammonia the meters will work better."

[1] See State Inspector's Report, 1877, p. 5.
[2] House Doc. No. 48, 1876.
[3] House Doc. 35, for 1877.

And again, for 1878,[1] he says: —

"There is very little excuse for leaving any considerable quantity of ammonia in purified gas, as it can be easily removed by simply washing or scrubbing it with water."

We here insert the reports of inspections of Cambridge gas, which have been brought to our attention.

Time of Test.	Illuminating Power in Candles.	Grains per hundred cubic feet of Gas.		Inspector.
		Ammonia.	Sulphur.	
1875	Not reported.	47.0	13.3	State Inspector.
1876	14.5	Not reported.	52.0	Boston Commission.
1876	16.5	9.9	22.2	State Inspector.
1877	16.0	8.8	18.2	State Inspector.
1878	16.1	4.9	13.4	State Inspector.
Sept. 1879	16.2	11.3	9.0	State Inspector.

The illuminating power of London gas is not allowed to fall below 16 candles, the amount of ammonia being restricted to $2\frac{1}{2}$ grains, and the amount of sulphur to 20 grains in 100 cubic feet.[2]

We close this consideration of the quality of Cambridge gas by a quotation and recommendation from the report of the State Inspector, made in January, 1877. He says: —

"The present law for the inspection of gas and meters was passed about sixteen years ago, and gas-making has made considerable advances during that time, and the weak places in the law have become apparent. . . . The law specifies that 'Illuminating gas shall not be merchantable, which has a minimum value of less than twelve candles,' and the inspector is ordered to report 'whether it is sufficiently well purified from sulphuretted hydrogen, ammonia, and carbonic acid.' . Probably very little gas is manufactured in this State that is as low as fourteen-candle power, the majority of companies sending out about sixteen-candle gas. In other words, the standard for illuminating power is so low as to be of no use. In regard to purity, the law is indefinite, as no fixed standard is set; neither is any mention made of any compound of sulphur other than sulphuretted hydrogen.

[1] House Doc. 43, for 1879.

[2] Boston Gas Commission Rept., p. 48.

"The only provision the present law makes for testing the gas is to direct the Inspector to make tests whenever required by the mayor and aldermen of any city, or the selectmen of any town. Practically speaking, no such calls are made at present. . . . I think it desirable to change the present standard, so that no gas shall have an illuminating power of less than fifteen candles, nor contain more than ten grains of ammonia, or twenty-five grains of sulphur, in one hundred cubic feet of gas; and that when, at any official testing, the gas does not comply with the foregoing requirements, a fine shall be imposed on the company making the gas."

The Inspector then recommends frequent inspection of gas manufactured, as being necessary, and mentions "Roxbury, Lowell, and Cambridge as requiring twenty-five to thirty inspections in a year, or in winter once every week or ten days."

Your Committee believes that such legislation would be beneficial to the interests of Cambridge consumers, in improving the quality of our gas, and would recommend that the Legislature be petitioned to consider the matter.

With regard to the third division of our subject, that of the price of Cambridge gas, we must substantially leave the matter where we found it. We do not know the cost of gas manufactured for our city, the capital employed, the loss by leakage, the amount of gas made per pound of coal used, and the amount and cost of coal and enriching material used, the income from sale of coke and tar, the number of miles of pipe and the average number of consumers per mile. If your Committee had received this information, which was sought from the only source from which it was possible to obtain it, we should have felt encouraged if we had learned that there were any peculiar circumstances, surrounding our company's investments, for which allowance should be made. We should also have been glad to report that the company was found to be making improvements, and that we really believe they intend to do their duty by the citizens, as well as by their stockholders. The best judgment we could form, having obtained such information, might have been beneficial alike to the company and to dissatisfied citizens, especially if we were enabled to state facts which showed the open recognition of the right of the people to know something of the affairs of the gas company. We would not deny that a proper discretion should be exercised by the company in allowing publicity of its details of management. We know that other gas companies have been

proverbially unwilling to furnish this information to parties whose right it is to ask it. Perhaps we have not adopted the best means to obtain the information, or have not been patient enough in seeking it. We were limited in time, and could not deal with the subject diplomatically. We believe, however, that the directors made up their minds not to furnish us with *all* the information we desired, and their letter gave us little encouragement to expect otherwise. We think they made a mistake if they did so decide. If this reticence is persisted in, the suspicion in the minds of the people will be strengthened into positive conviction, and competition by rival companies or by the city, as a corporation, may ensue.

"There would seem to be no reason why the gas companies of this State should not be required to make public the details of their business in the same manner as the railroad companies; or in the same manner as the London gas companies are required to do.

"While there should be, and probably is, no disposition to complain of a reasonable profit commensurate with the capital employed and risk involved, the privacy with which the accounts of these companies have been kept, has led the public to believe that the profits are large, and has probably induced the feeling of hostility to gas companies which it cannot be denied is very prevalent in the community." — *Boston Gas Commission Report*, p. 62.

It is a matter of common knowledge, we suppose, that the Cambridge Gas Light Company has recently made large outlays on real estate and new works thereon, and that for several years it has paid dividends of ten per cent to its stockholders. It is probably true that it has been to large expense in laying pipes in streets where there are few consumers. It does not furnish a large amount of gas for use in the street lamps. It has recently begun to enrich its gas by the use of naphtha, and has lately reduced the price of gas twenty-five cents per thousand, to those who pay their bills promptly. These facts should not be left out of our report, though we are unable to state definitely what allowance should be made for them.

The price of gas in Cambridge is $3 per thousand cubic feet, with a discount of twenty-five cents per thousand feet on all bills paid on or before the 25th of the month in which the bill is rendered.

We give below a table showing the prices in other cities and towns about us, and some means of comparison between them.

Place.	Year.	Price per Thousand Feet.	Miles of Pipe-main.	Million Feet of Gas sold.	Number of Consumers per Mile.	Source of Information.
Cambridge	1879	$3.00	abt. 70	No report	No report	
Boston	1875	*2.50	112	688	"	Boston Commissioner's Report.
Roxbury	1875	*2.70	51½	90	"	"
Dorchester	1874	*4.00	34½	31	"	"
South Boston	1874	*3.00	22½	53	"	"
Salem	1874	*3.50	24	33	"	"
Lowell	1875	2.50	41	78	"	"
New Haven, Conn.	1875	3.00	60	112	"	"
Hartford, Conn.	1875	3.00	66	100	"	"
Washington, D. C.	1874	2.50	116	252	"	"
Worcester	1879	To City . . 2.56¼ 2.85	40	No report	67	Superintendent of Company.
Brookline	. .	To Town . 2.75 To Boston, 2.50 Citizens . . 3.00	42	"	236	" " "
Salem	1879	To City . . 2.50 3.00	25	"	83	Treasurer of Company.
Roxbury	1879	To City . . 2.25 2.50	56	"	71	Superintendent of Company.
Marblehead	1879	4.00	2½	"	64	" " "
Newton	1879	3.00	48	"	23	" " "
Lynn	1879	To City . . 2.90 3.50	16	"	No return	" " "

* Subsequently reduced.

Your Committee is convinced that this subject should be agitated until further reductions are made in the price, and the quality of Cambridge gas is improved, or it be plainly demonstrated that neither can be done in justice to the owners of the property, who have a right to fair profits.

The Committee therefore recommends the adoption of the accompanying orders, looking to a thorough inspection of the gas manufactured by all the companies in the Commonwealth, and the examination, by a competent auditor, of the accounts of said companies.

Respectfully submitted,

WM. H. WHITNEY,
M. G. HOWE,
NATHAN G. GOOCH,
H. H. GILMORE,
E. R. McPHERSON,

Joint Special Committee upon the Matter of Gas Supply.

REPORT

OF THE

CAMBRIDGE WATER BOARD.

To the Honorable City Council of the City of Cambridge:—

In compliance with the provision of the city ordinance, the Cambridge Water Board herewith presents its Fifteenth Annual Report.

Total Cost of the Works.

Cost of the Water Works Nov. 30, 1878, as per last year's report	$1,692,171.94
Expended on construction during the year ending November 30, 1879	4,424.56
Total expenditure	$1,696,596.50

Net Cost of the Water Works.

Total cost as above stated	$1,696,596.50
Less amount of water loan paid from the water-debt sinking-fund up to Nov. 30, 1879	186,400.00
Leaving the amount of unpaid water debt	$1,510,196.50
Deduct from this the value of the water-debt sinking-fund, as shown by the trustees' account of Nov. 30, 1879	353,468.02
Showing the net cost of the works, Nov. 30, 1879	$1,156,728.48

Statement showing in brief the transactions on account of the Water Works for the year ending Nov. 30, 1879.

Received.

Appropriation for construction account		$8,000.00
From water rates	$166,248.86	
Less water rates refunded	1,566.96	
		164,681.90
Shutting off and letting on water		982.65
Rent of house		144.00
From supply account		2,883.17
From bonds of A. F. Fifield		1,250.00
		$177,941.72

Expended.

For construction account	$4,424.56
For maintenance account	25,993.08
For supply account	1,534.20
Interest on water debt	91,585.00
Paid into the sinking-fund	45,855.00
Unexpended appropriation	3,575.44
Balance, showing gain in 1879	4,974.44
	$177,941.72

Comparative Receipts.

Water rates for the year ending Nov. 30, 1879	$164,681.90
Water rates for the year ending Nov. 30, 1878	157,443.91
Showing gain in the year 1879	$7,237.99

Water Bond Account.

Whole amount of water bonds issued	$1,714,900.00
Less amount paid from sinking-fund	186,400.00
Leaving amount of water bonds unpaid	$1,528,500.00
Total cost of works as herein shown	$1,696,596.50
Less amount paid from sinking-fund	186,400.00
Showing the unpaid cost of Water Works	$1,510,196.50
Amount of unpaid water bonds	$1,528,500.00
Amount of unpaid cost of Water Works	1,510,196.50
Showing that the unpaid water bonds exceed the unpaid cost of the Water Works	$18,303.50

It is plain that this amount of $18,303.50 does not in any way belong to the Water-Bond debt, and further, that the Water Works have been charged the interest on this sum from time to time while it has been accumulating, as was explained in last year's report. This has been brought about by the unexpended balances from the sale of water bonds having lapsed into the city treasury at the end of the year, while the Water-Works account got no credit in the next year for this unexpended amount.

We would again recommend that you cause this account to be made up correctly, and the proper steps taken to make the unpaid water bonds and the unpaid cost of the Water Works agree, and that the accounts be so kept in the future that a similar discrepancy will not again appear.

Comparative Rainfall as given by the Cambridge Observatory, and Height of Water in the Pond from our own Record.

Months.	Rainfall.			Below High-water Mark.		
	1877.	1878.	1879.	1877.	1878.	1879.
	Inches.	Inches.	Inches.	Feet.	Feet.	Feet.
[1] December	5.09	0.84	4.39	4.57	2.20	2.15
January	3.87	5.84	2.20	4.49	2.00	2.25
February	0.89	6.59	3.43	4.21	1.66	2.92
March	7.46	4.17	4.02	2.00	0.75	2.72
April	3.66	5.15	5.65	0.66	0.68	1.62
May	3.58	0.87	1.28	0.96	0.75	1.50
June	2.26	2.68	4.59	1.75	1.42	1.79
July	2.66	4.82	2.64	2.68	2.29	2.27
August	4.58	6.21	5.79	3.50	2.27	2.79
September	0.51	2.24	1.71	4.30	2.63	3.11
October	6.77	5.06	0.76	4.50	3.08	3.97
November	7.60	6 52	3.18	3.91	3.00	4 58
Total	48.93	50.99	39.64	Av. 3.13	1.89	2.64

[1] This is in each case the December of the previous year.

It will be seen that we had 11.35 inches less of rainfall in 1879 than in 1878, — a falling off of about 22 per cent; and that we have 1.58 inches less water in the pond than at the close of last

year. The difference in the height of water in the pond at this time and a year ago is principally accounted for by the increased consumption, and by the difference in the rain-fall. The greatest difference in the height of water in the pond during the year, as shown is 3.08 feet from the highest to the lowest point reached.

We find, by the engineer's report to the superintendent, that we have used this year 1,715,200 pounds of coal and pumped 887,820,900 gallons of water. This shows an increase this year over last year of 186,500 pounds of coal, and 63,946,500 gallons of water. The difference in the amount of water used is generally accounted for, in part by the revival of business and the occupation of vacant houses, but more, we think, by the increased amount used for watering the streets, and for garden hose, on account of the dry weather running through the latter part of the year. Our chronograph, which measures accurately the night consumption, and the waste and leaks, shows that our pipes are in as sound condition as they have ever been, which reflects credit on our superintendent, who has been untiring in his efforts to reduce the amount of waste and leaks to the lowest possible point.

It is a source of pleasure to notice at how small expense the two Worthington pumps that we have in use have been kept in repair; they are each of 5,000,000 gallons daily capacity, and by reference to the engineer's report it will be seen that the cost of repairs for the year amounted to only $64.24; confirming us in our view that, in point of economy, these are the best pumps in the market for water-works use.

Purity of Our Water.

We have had very little trouble this year with the vegetable growth in the water. It has been analyzed from time to time, as taken from different places, with about the same results as in former years. We stated in our last report what had been done to prevent the contamination of the water in Fresh Pond on account of the building of a slaughter-house in Belmont near the pond. What we then feared seems to be true, — that there is no power, even in the State Board of Health, to stop the business until we can prove that our water has actually become contaminated by the drainage or filth from the buildings. We

therefore repeat our recommendation, made last year, that application be made to the Legislature for an enlargement of the powers of the Board of Health, so that when a plain case is made out, showing that any business must, in the nature of things, result in the pollution of the sources of any water supply, the same can be prohibited and stopped at once before the damage is done. As it is, we have done the best we could to guard against this danger, and the State Board of Health has done all it could, with the powers it has, to assist us. One of the Board has visited the slaughter-house every week and observed the process of the business, taking such notes as the importance of the case required for future reference, should they be needed.

We have for several successive years called your attention to some bad sewerage matter that runs into the pond near the Cushing Street district in Belmont; and we again refer to this subject, as we believe it is by far the most important connected with the purity of the water of Fresh Pond itself. We stated last year "that it was believed the State Board of Health now had power to call on parties whose drainage pollutes the sources of any water supply to take care of the sewerage themselves, and that a demand had been made upon Belmont to stop the drainage from Cushing Street running into the pond." We now understand that there are doubts in this matter about our right to call on Belmont to remove this nuisance, and furthermore there are doubts whether, without additional powers from the Legislature, we have the right to go into Belmont to build a sewer ourselves to abate this source of pollution. It will therefore appear that what is done must be done by the city of Cambridge to protect her citizens. And we do again most earnestly recommend that whatever powers are necessary be secured from the Legislature as soon as possible, and that steps be taken to have this source of pollution to our water supply at once removed. This matter has been more fully presented in our former Reports, and we need only refer you to them for any further details that you may wish in this matter.

General Remarks.

With a rapidly growing city, such as we have, the matter of the sources and quality of our present and future water supply is a subject of the greatest importance, and cannot be too carefully

considered. It was no doubt in this view that more than a year ago you appointed a Commission to examine this whole matter in all its details, with the assistance of some of the best expert talent in this country. This work has been in progress during the past year, and we understand the Commission has completed its work and will report to you in print in a short time. This will make it unnecessary for us to say any thing upon this matter in the present report.

It is understood that the Commission has treated this subject with great care, with reference to our present and prospective necessities; and, coming from such high authority, the report cannot fail to command the attention of all thoughtful people to this subject, which is so intimately connected with our health and comfort.

We look forward with great interest to the views and recommendations of those who are so well able to treat this subject, and trust that their conclusions will be so satisfactory that we may be able to decide on some comprehensive plan of action for the present and future that will meet the approval of all our citizens.

We recommend that, when the report is made, it be printed with our report, with the other city documents, for our future reference and guidance.

We are pleased to report that our recommendations in reference to improving the strip of land lying between Lakeview Avenue and the pond, east of our engine house, which the Tudor Heirs agreed to give to the city upon condition of its improving the same as a common, has been well begun. It has been graded, fenced, and grassed over, and a large number of trees have been set out on it. A continued improvement is contemplated next season by setting out shrubbery, and it will thus become an attractive place to all who by pleasure or business are led to pass that way.

We would renew our former expressed appreciation of the faithfulness of our Superintendent, Registrar, and all other officers and employés of the Water Works; and we would especially acknowledge the assistance rendered to us by the City Solicitor and City Engineer, who have always been ready to assist us to the extent of their ability whenever we have called on them.

For full details of the work done the past year and the present condition of the Water Works, we would refer you to the reports of the Superintendent and Registrar, made to us, and which we herewith submit as part of our report.

GEO. P. CARTER,
C. W. KINGSLEY,
J. WARREN MERRILL,
H. L. EUSTIS,
K. S. CHAFFEE,
SAML. L. MONTAGUE,
GEORGE S. SAUNDERS,
} *Water Board.*

REPORT

OF

THE WATER REGISTRAR.

WATER REGISTRAR'S OFFICE,
CAMBRIDGE, *Dec.* 13, 1879.

To the Cambridge Water Board: —

The undersigned herewith presents his Fourth Annual Report, showing the "receipts, expenditures, and abatements" for the year ending Nov. 30, 1879, together with a statement of the number of water-takers, fixtures, &c., and other matters in his department, as required by city ordinance.

Amount of bills remaining unpaid Nov. 30, 1878.

Water rates	$7,518.51	
Meter rates	646.29	
Supplies and Repairs	893.95	
		$9,058.75

Amount of bills placed in City Treasurer's hands for collection from Nov. 30, 1878 to Nov. 30, 1879.

Water rates	$144,531.55	
Meter rates	24,248.29	
Supplies and repairs	2,771.74	
Off and on water and seals	982.65	
Rent of house	144.00	
		172,678.23
Total		$181.736.98

Deduct.	Abated.	Unpaid.	
Water rates	$8,126.01	$1,763.66	
Meter rates	329.10	477.01	
Supplies and repairs . . .	4.00	778.52	
	$8,459.11	$3,019.19	11,478.30
Balance			$170,258.68

Receipts.

Water rates	$135,486.56	
Meter rates	23,505.32	
		$158,991.88
Water rates for previous year	$432.96	
Meter rates for previous year	110.49	
City rates for previous year	6,713.53	
		7,256.98
		$166,248.86
Off and on water and seals	$982.65	
Rent of house at pipe-yard	144.00	
		1,126.65
		$167,375.51
Less water rates refunded		1,566.96
		$165,808.55
Supplies and repairs		2,883.17
		$168,691.72
From bonds of A. F. Fifield		1,250.00
		$169,941.72
Amount reported by City Treasurer as received, less amounts refunded by him		169,941.72

Expenditures.

Construction account		$4,424.56
Supply account		1,534.20
Maintenance account, viz.:		
Care and repairs	$16,402.46	
Pumping service	4,192.56	
Office expenses	5,398.06	
		25,993.08
Total		$31,951.84

Abatements.

Abatements of water rates have been made during the year to the amount of	$8,455.11
Abatements on repair account	4.00
Total	$8,459.11
Water rates have been refunded, for houses shut off or fixtures sealed, to the amount of	$1,566.96

The above amount of abatements is caused by the necessary abatement of all charges upon fixtures sealed or houses shut off (whether per order of owners or for non-payment) before the books can be balanced. New charges are then made when the water is again let on.

Water has been shut off for non-payment of rates, or per order of owners, on account of vacancy, and seals have been applied by request of owners or occupants, as follows: —

Supplies shut off in 1879	450
Supplies let on in 1879	318
New supplies let on in 1879	134
Supplies let on (shut off in previous years)	115
Seal-locks applied to fixtures in 1879	1,113
Seal-locks removed from fixtures in 1879	415
Seal-locks removed (put on in previous years)	401

Water rates unpaid Nov. 30, 1879	$441.53
City water rates unpaid Nov. 30, 1879	1,309.41
Meter rates unpaid Nov. 30, 1879	132.69
City meter rates Nov. 30, 1879	344.32
Supplies and repairs unpaid Nov. 30, 1879	778.52
Total	$3,006.47

Statement of the yearly revenue received from water rates since the purchase of the works by the city.

From April 28,	1865,	to Dec. 1,	1865	$32,367.19
„ Dec. 1,	1865	„	1866	40,073.27
„ „	1866	„	1867	52,733.62
„ „	1867	„	1868	63,747.42
„ „	1868	„	1869	76,149.30
„ „	1869	„	1870	92,606.95
„ „	1870	„	1871	111,782.65
„ „	1871	„	1872	127,201.30
„ „	1872	„	1873	146,117.32
„ „	1873	„	1874	153,634.27
„ „	1874	„	1875	138,880.37
„ „	1875	„	1876	179,166.76
„ „	1876	„	1877	154,843.59
„ „	1877	„	1878	157,443.91
„ „	1878	„	1879	164,681.90

All premises in the city where Fresh Pond water is used have been visited during the year, and the office list of fixtures changed in accordance with the report of the inspector, often showing changes that should have been reported to the Registrar by parties making them, in accordance with the provisions of the city ordinance.

125 new supplies have been laid during the year, 10 of which have not yet been paid for.

21 meters have been placed in use in various locations during the year, and 11 have been removed. 136 meters are now in use.

Besides the manufactories, &c., supplied by meter, water is now supplied to 9,968 families, 743 stables, 412 shops, stores and offices, by the following fixtures, viz: —

12,013 faucets.	57 urinals.
3,266 wash-basins.	66 yard hydrants.
1,805 wash-tubs.	4 fountains.
1,767 bath-tubs.	1,003 hose.
3,989 pan closets.	3 tumbler-washers.
608 slop closets.	

Also, —

579 fire hydrants (including 4 on private premises).
14 fire-reservoirs.
17 drinking fountains.

The above is exclusive of the school-houses, engine-houses, police-stations, and other city buildings, for which special rates are charged, except where meters are located.

By the provisions of an ordinance now awaiting final action by the City Council, the rate charged for the first faucet, used by one family only, has been reduced to $5, — the rates for faucets used "by more than one family and less than four," and "by four or more families" being also reduced to $4 and $3.50 respectively.

This large reduction of rates while many of the cities and towns are endeavoring to increase their rates (now practically higher than Cambridge), so as to place their water-works upon the same self-sustaining basis that Cambridge has been, is partially offset by restoring the allowance for fire hydrants to $30 each per annum, which had been allowed until 1875, when the allowance was reduced to $11 each.

If the receipts from increased manufacturing, and building and occupancy of houses, continues as begun this year, this reduction will largely benefit those paying less than the established commutation rate of $22, while the self-supporting principle may be sustained.

In closing my report I must not omit to express my appreciation of the ability and faithfulness of my assistant, Mr. Walter H. Harding, which I do with peculiar pleasure in view of the unusual duties devolving upon and cheerfully performed by him during a long-continued illness which, at times, in more or less degree, prevented my close attention to the duties of the office. The exactness with which all accounts balanced at the close of the year shows not only the above-mentioned faithfulness, but also the correctness of the present system of keeping the accounts.

Respectfully submitted,

J. WARREN COTTON,
Water Registrar.

REPORT

OF THE

COMMITTEE ON ACCOUNTS OF THE CAMBRIDGE WATER BOARD.

We have examined the abstract of the Books of the Water Registrar as prepared by him, and the statements of the City Treasurer and Auditor of Accounts, all of which are herewith submitted for record on the books of this Board, and we find them to agree.

It appears that the amount of bills in the hands of the Treasurer uncollected, Nov. 30, 1878, was: —

For water-rates	$7,518.51	
„ meter-rates	646.29	
„ supplies and repairs	893.95	
Total		$9,058.75

The amount of bills placed in his hands for collection by the Water Registrar during the year ending Nov. 30, 1879, was: —

For water-rates	$144,531.55	
„ meter-rates	24,248.29	
„ supplies and repairs	2,771.74	
„ turning off and on	982.65	
„ rent of house	144.00	
		172,678.23
Of this amount the Treasurer has collected	$170,258.68	
There have been abated	8,459.11	
And there are in his hands uncollected	3,019.19	
Total		$181,736.98

There have been refunded	$1,566.96
And there remains out a warrant uncalled for but issued by the Registrar	.92
Total	$1,567.88

In addition to the above there has been received by the Treasurer, on the bond of the former Registrar, the sum of $1,250.

J. WARREN MERRILL,
SAM'L L. MONTAGUE,
GEO. S. SAUNDERS,
Committee on Accounts.

REPORT

OF THE

SUPERINTENDENT OF THE WATER WORKS.

CAMBRIDGE, Dec. 3, 1879.

To the President and Members of the Cambridge Water Board: —

GENTLEMEN, — Your Superintendent's Annual Report upon the Works and the operations of the past year is herewith presented.

Little Pond, Wellington Brook, and Conduit.

During the past season nothing has been done on the borders of Little or Spy Ponds, nor has the pipe connection between them been used.

The usual inspection of Wellington Brook and its branches has shown nothing objectionable that was not known at the date of my last report. Water has been drawn from this source for five hours in March and three days in April, at which time occurred a heavy rainfall.

An additional gate has been set at Wellington Brook gate-house, across the conduit, more completely to control it. Between this point and Little Pond the conduit, as well as the filter basin, appears to be in good condition. From Wellington Brook to Fresh Pond the conduit has been pumped down sufficiently for an inspection of the interior to be made throughout this length. It was found clean and in perfect repair. Water was delivered into Fresh Pond from Little Pond during one day in April.

Fresh Pond.

Except the removal of large quantities of weeds, nothing has been done on the borders of Fresh Pond. The stone facing of

the banks remains in good condition. At the Alewife Brook gate-house an eighteen-inch brick and cement wall has been built across the culvert to the brook, and the culvert has been filled, for twenty feet of its length, with clay and stone, to cut off all connection between Fresh Pond and the brook.

Tudor Park.

A strip of land, containing about an acre and a quarter, lying between Fresh Pond Drive and the Pond, having been conditionally given to the city, has been improved the past season. Large quantities of loam and dressing have been spread over it, sixty-six Scotch elm and maple trees have been set out, it has been enclosed by a fence, and received the above name, and it now presents a neat and attractive appearance.

Pumping Works.

The grounds have been kept in order, the grass cut, and walks graded, and slight repairs made inside the engineer's house. A twenty-eight-ounce copper roof to the chimney has been substituted for the galvanized iron one, which was falling to pieces. The coal-shed floor has been cemented, and eight of the posts sustaining its roof have been spliced, those parts having decayed which had been covered with coal for a long period. Only a year's supply of coal should be put in at one time, as it depreciates in quality, and opportunities to dry and air the shed are necessary. The end wall of the boiler-room, adjoining the coal-shed, has received serious damage from coal-cars running against it while getting in coal, and needs repair. Accompanying this report is that of the engineer upon machinery repairs and the engine records with a schedule of stock on hand.

Reservoirs.

The outside of the stand-pipe has been painted, and a vane erected. The capping-stones of the reservoir curb having become displaced and the joints broken by the frost, repairs have been made by excavating around the outside of the capping-stones, three feet in width and from $3\frac{1}{2}$ to $4\frac{1}{2}$ feet in depth, and filling with concrete from one to two feet solid, and then sloping to within three inches of the top, where the width was a few inches. This work was completed the last of June, and since that time

the reservoir has been filled each day to high-water mark without any indications of leaks. The reservoir is now in good repair, as also are its surroundings, and I expect that no further outlay will be required for some length of time other than for general care.

Distribution Pipes.

But very little new pipe has been laid the past season. A six-inch pipe has been substituted for a four-inch pipe in First Street, and 177 feet of six-inch pipe was raised. Connection has also been made between the ends of the lines on Sparks Street near Vassal Lane, and on Garden Street near the Botanical Garden. Five new blow-offs have been put on to dead ends. I think the time has come when the pipes should be raised in the Cambridge Street and Cowperthwaite Street districts. In these territories they are very deeply covered, in some places being under the old sewers, and leaks on supply pipes are constantly occurring. The chronograph has become invaluable for detecting leaks and determining the night consumption and waste. Very valuable records have been obtained from it during the year, especially in October and November, all of which show the distribution service to be in as good condition as appears from any prior observations.

New Supplies.

One hundred and twenty-five new supplies have been laid this season, increasing the total of last year to 7,183. Twenty-two old supplies have been renewed as they had become rusted out. Ninety-seven sidewalk shut-offs, with stand-pipes, have been put on to old supplies. Two hundred and twenty-five leaks have been stopped, forty-seven of which were on three-inch pipe and upwards.

Hydrants, Meters, Fountains, and Stand-Pipes.

Three new post-hydrants of the Boston Machine Company pattern, have been set in new locations. Five flush-hydrants have been disconnected. The total number is now 579, of which 239 are post and 340 flush hydrants. Four new garden hydrants have been set, making the present total 107. Twenty-one new meters have been placed, and eleven disconnected, making the total number 136. The number of drinking-fountains re-

mains the same as at date of my last report. Three have had cesspools built around them, and been supplied with drainage. All are in good repair. One new stand-pipe for street-watering has been set on North Avenue opposite Tannery Street, making the total number in use thirty-seven.

Pipe Yard.

All the pipe and fittings on the wharf have been removed to the pipe yard except the twenty-inch and thirty-inch. Slight repairs have been made on the house, and all the buildings are in good repair.

The following tables show the location of meters, fountains, and stand-pipes, the details of main and supply extension, and the account of stock on hand. A diagram is also appended, showing relative consumption from 1870 to and including the present year.

All of which is respectfully submitted,

HIRAM NEVONS, *Superintendent.*

REPORT

OF THE

ENGINEER AT THE PUMPING STATION.

PUMPING STATION, CAMBRIDGE WATER WORKS,
CAMBRIDGE, Dec. 1, 1879.

Hiram Nevons, Esq., Supt. Cambridge Water Works:—

SIR, — I would report that the engines and boilers are in good condition, only the ordinary repairs having been required during the past year. The small engine which has been on hand here for the past ten years has been set up in the cellar, and an eighteen inch by ten foot engine lathe, with shafting, pulleys, hangers, &c., purchased; the whole adding much to the convenience of doing repairs. Following will be found a statement of the expenses at the pumping station, together with the engine record, pond level, and rainfall for the past year, also a list of stock and tools on hand.

E. C. BROOKS, *Engineer.*

Statement.

$765\frac{1600}{2240}$ tons Cumberland Coal at $4.85	$3,713.72
Oils, waste, packing, etc.	247.06
Salaries	3,150.00
Repairs on engines and boilers	64.24
Tools	427.94
Repairs on buildings and care of grounds	522.34
	$8,125.30

Engine Record, Pond Level, and Rainfall.

Date.	Total Running Time.		Daily Average Running Time.		Total Coal consumed.	Daily Av. Coal consumed.	Total Water pumped.	Daily Average Water pumped.	Average Height of Pond.	Rainfall.
	hrs.	min.	hrs.	min.	pounds.	pounds.	gallons.	gallons.	feet.	inches.
December, 1878	306	50	9	54	141,100	4,552	65,414,400	2,111,013	14.71	4.67
January, 1879	379	05	12	14	164,900	5,319	81,742,200	2,636,845	14.62	2.25
February, ,, ...	320	55	11	28	140,900	5,032	73,137,300	2,612,046	13.96	2.92
March, ,, ...	330	30	10	40	148,600	4,794	75,153,600	2,424,310	14.15	4.26
April, ,, ...	319	05	10	38	143,800	4,793	70,322,400	2,344,080	15.26	5.13
May, ,, ...	362	30	11	42	153,200	4,942	80,520,300	2,597,429	15.45	1.22
June, ,, ...	356	25	11	53	137,900	4,597	78,305,100	2,610,170	15.08	4.58
July, ,, ...	379	15	12	14	145,000	4,677	83,484,000	2,693,032	14.59	2.76
August, ,, ...	369	15	11	55	149,400	4,820	81,189,000	2,619,000	14.03	5.93
September, ,, ...	304	20	10	09	131,900	4,397	67,385,100	2,246,170	13.75	1.50
October, ,, ...	317	20	10	14	131,700	4,248	70,279,800	2,267,090	12.91	0.67
November, ,, ...	295	45	9	51	126,800	4,227	60,860,700	2,028,690	12.30	2.99
Total.	4,041	15	..	..	1,715,200	. . .	887,820,900	. . . .	. . .	38.88
Daily Average.	11	4	..	..	4,699	. . .	2,432,386	. . . .	14.234	

Stock on Hand, December 1, 1879.

688 tons Cumberland coal; 13 gallons valvoline oil; 11 gallons machine oil; 6 gallons kerosene; 1½ gallons benzine; ¾ gallon boiled oil; 1 gallon raw linseed oil; ¾ gallon oil polish; 25 pounds tallow; 15 pounds cotton waste; 25 pounds rubber packing; 20 pounds hemp packing; 5 pounds Tuck's packing; 3 pounds Silver Lake packing; 3 pounds asbestos packing; 24 9-inch rubber valves; 2 valve seats; 2 steam-gauges; 10 pounds Babbitt metal; 2 pounds solder; 3 pounds red lead; 3 pounds mercury; 15 pounds steel; 5 pounds sheet brass; 1½ bales hair felt; 40 pounds soap; 2 brooms; 15 feet 5-inch rubber belting; 6 files; 2 pounds emery; ½ quire emery-cloth; 10 gauge-glasses; 15 lamp-chimneys; 3 dozen lamp-wicks; 3 lantern-globes; 1 barrel cement; 1 barrel kaolin; ¼ barrel brimstone; 12 grate-bars; 300 fire-brick; 500 common brick; 10 pounds nails; 300 pounds bolts and nuts; 1 pair plungers and rings for No. 2 engine; 20 feet 2-inch brass pipe; 30 feet 1½-inch brass pipe; 7 feet ½-inch brass pipe; 12 feet ¼-inch brass pipe; 6 feet 3-inch iron pipe; 30 feet 1½-inch iron pipe; 40 feet 1¼-inch iron pipe; 40 feet ¼-inch iron pipe; 3 1½-inch globe-valves; 46 elbows; 19 Ts; 13 unions; 23 nipples; 35 plugs; 37 couplings; 2 crosses; 24 bushings; 10 feet 24-inch flange pipe; 8 feet 6-inch flange pipe.

Tools, Furniture, and Instruments.

1 engine lathe; 1 lathe chuck; 6 lathe tools; 6 lathe dogs; 1 grindstone; 1 3-inch by 9-inch engine, with shafting, belting, &c.; 1 vise; 1 vise-bench; 1 set pipe-dies; 1 set pipe-taps; 1 set hand-taps; 2 pipe-cutters; 14 pairs pipe-tongs; 2 hand-hammers; 1 copper hammer; 18 cold chisels; 8 files; 5 screw wrenches; 1 hack saw; 1 Stillson wrench; 21 fork wrenches; 27 socket wrenches; 1 hydrant wrench; 6 gate wrenches; 2 clamp-screws; 1 sledge; 2 ratchets; 18 drills; 1 breast-drill; 2 jack-screws; 6 steel bars; 1 crowbar; 2 soldering-irons; 4 cylinder-head cranes; 1 level; 1 gasket-cutter; 2 ladles; 12 eyebolts; 75 starting-bolts; 2 starting-keys; 1 chain fall; 2 wooden horses; 1 oil cabinet; 1 set measures; 1 6-gallon can; 3 1-gallon cans; 3 3-gallon cans; 2 lamp-fillers; 2 funnels; 6 squirt cans; 1 oil pump; 1 carpenter's bench; 4 planes; 4 hand-saws; 10 chisels;

7 gouges; 3 screw-drivers; 1 bit-stock; 12 bits; 3 augers; 1 draw-knife; 1 spoke-shave; 1 axe; 2 mallets; 1 saw-set; 1 steel square; 1 set fire tools; 1 coal-car; 1 pair platform scales; 2 wheelbarrows; 12 scoop shovels; 12 long-handle shovels; 2 short-handle shovels; 2 tube-brushes; 6 picks; 1 forge; 1 anvil; 5 pairs tongs; 3 hand-chisels; 1 lawn-mower; 2 steel rakes; 2 wooden rakes; 2 scythes; 2 forks; 1 manure-fork; 1 prong hoe; 1 weeder; 1 spade; 1 scythe-stone; 6 ladders; 3 step-ladders; 1 cast-iron roller; 200 feet 2-inch linen hose and hose pipe; 100 feet $\frac{3}{4}$-inch hose and hose pipe; 1 desk; 2 tables; 2 clocks; 18 chairs; 9 mats; 1 lot matting; 6 spittoons; 1 water-cooler; 6 fire-pails; 7 water-pails; 4 bracket-lamps; 6 lanterns; 2 hand-lamps; 1 watering-pot; 1 dust-pan; 2 dust-brushes; 1 window-brush; 2 floor-brushes; 4 scrubbing-brushes; 1 feather duster; 2 mops; 1 barometer; 1 hygrophant; 1 thermometer; 2 rain gauges; 1 snow gauge.

List of Meters in use November 30, 1879.

METERS.	Locality.	Size.	Description.
		Inch.	
American Net and Twine Co.	Third St.	1½	Worthington.
American Steam Safe Co.	Main St.	1	,,
Agassiz Museum	Divinity Ave.	1	,,
Boston & Albany R. R.	Putnam Ave.	1½	,,
Boston & Lowell R. R. (Roundhouse)	Prison Point St.	2	,,
,, ,, ,, (Repair Shop)	,, ,, ,,	2	,,
,, ,, ,, (New Roundhouse)	,, ,, ,,	2	,,
,, ,, ,, (Paint Shop)	,, ,, ,,	1	,,
,, ,, ,,	,, ,, ,,	6	Union Rotary.
Bird, H. M.	Broadway	⅝	,, ,,
Boston Chemical Works	Third St.	¾	Worthington.
Bullock, O. S.	Broadway	1	,,
Boston Stamping Co.	Third St.	2	,,
Boston Woven Hose Co.	Portland St.	⅝	,,
Close, George	Broadway	1	,,
Clark, B. P.	Main St.	1½	,,
Cochran, A. & Co.	Potter St.	¾	,,
Coleman, J. & Son	Broadway	1	,,
Cooper's Car Wheel Co.	Hampshire St.	¾	,,
Capen, Sprague, & Co.	Sixth St.	⅝	Ball & Fitts.
Cofran, S. M.	Vassal Lane	1½	Worthington.
Cambridgeport Diary Co.	Magazine St.	1	,,
Cambridge Gas-Light Co.	Third St.	2	,,
City of Cambridge (Shepard School)	North Ave.	2	,,
,, ,, ,, (Central Sq. Building)	Green St.	2	,,
,, ,, ,, (Ward 1 Building)	Brattle Square	2	,,
,, ,, ,, (Cambridge Cemetery)	Coolidge Ave.	4	,,
,, ,, ,, (Almshouse)	Tannery St.	2	,,
Campbell Brothers	Osborn St.	⅝	Désper.
Coolidge, J. G.	Coolidge Ave.	1	Worthington.
Carr Brothers	Lopez St.	1	,,
Draper & Co.	Otis St.	¾	,,
Downing, T.	Eustis Ct.	1	,,
Davis, Mason	Lincoln St.	⅝	,,
Davis, Curtis, & Co.	Broadway	1½	,,
Davis, James C. & Son	,,	1	,,
Dailey, William	Cambridge St.	1	,,
Ela, Richard	Broadway	1	,,
Eagle Rubber Co.	Potter St.	2	,,
French, C. A.	Farwell Pl.	1	,,
Fenton & Co.	Gore St.	1½	,,
Felton Hall	Cambridge St.	1½	,,
Fitzpatrick, Alfred	Sands St.	¾	,,
Geldowsky, F.	Otis St.	1	,,
Greeley, L.	Broadway	1½	,,
Griffin & Dolan	Decatur St.	¾	,,
Holmes, F. M., & Co.	Cambridge St.	2	,,
Goepper Brothers	Gore St.	¾	,,
Harvard College (Boylston Hall)	. . . . .	1	,,
,, ,, (Seaver Hall)	Quincy St.	⅝	,,
,, ,, (Gymnasium)	. . . . .	1½	,,
,, ,, (In Yard)	. . . . .	1½	,,
,, ,, (Thayer Hall)	. . . . .	1½	,,
,, ,, (Holworthy Hall)	. . . . .	¾	,,

List of Meters in use November 30, 1879 — Continued.

METERS.	Locality.	Size.	Description.
		Inch.	
Harvard College (Stoughton Hall)	. . . . .	$\frac{5}{8}$	Worthington.
,, ,, (Memorial Hall)	Cambridge St. .	2	,,
,, ,, (Boat-house)	Flagg St. . . .	$\frac{3}{4}$	Ball & Fitts.
,, ,, (Holyoke House)	Harvard St. . .	2	Worthington.
,, ,, (Botanical Garden)	Garden St. . .	1	,,
Harvard Laundry	Douglass St. . .	$\frac{3}{4}$	Ball & Fitts.
Hazlett, W. H.	Green St. . . .	1	Worthington.
Houdlette & Ellis	Portland St. . .	2	,,
Houghton, H. O., & Co.	Blackstone St. .	1	,,
,, ,, ,,	,, . .	$\frac{3}{4}$	,,
Hews, A. H. & Co.	Crescent Ave. .	1	,,
Hale, Teele, & Bisbee	Davis St. . . .	1	,,
Hixon, E.	Harvard St. . .	$\frac{3}{4}$	,,
Hovey's Nursery	Cambridge St. .	1	,,
Jones, C. L. & Co.	Pearl St. . . .	$\frac{3}{4}$	,,
Jaynes & Co.	Pacific St. . . .	$\frac{5}{8}$	Ball & Fitts.
Kennedy, F. A.	Green St. . . .	1	Union Rotary.
Kemp & Son	Davis St. . . .	1	Ball & Fitts.
Kendall & Roberts	Main St. . . .	$\frac{3}{4}$	Worthington.
Kershaw & Co.	Hampshire St. .	1	,,
Little, Brown, & Co.	Blackstone St. .	1	,,
Low, J. W.	Reed St. . . .	$1\frac{1}{2}$	,,
Lincoln & Chamberlain	Distillhouse St. .	2	,,
Mount Auburn Corporation	Brattle St. . .	1	,,
,, ,, ,,	Mt. Auburn St. .	$1\frac{1}{2}$	,,
Mason & Hamlin Organ Co.	Broadway . . .	1	,,
Middlesex Bleachery	Sacramento St. .	$\frac{3}{4}$	,,
Moering, Mrs. A. L.	Main St. . . .	1	,,
Murdock, Walter H.	Hews St. . . .	$\frac{5}{8}$	Désper.
Middlesex County (House of Correction)	Thorndike St. .	2	Worthington.
,, ,, (Court-house)	,, ,, . .	$\frac{3}{4}$	Ball & Fitts.
,, ,, (Court-house)	Otis St. . . .	$\frac{3}{4}$	,, ,,
,, ,, (Registry of Deeds)	,, ,, ...	$\frac{3}{4}$	Worthington.
New England Glass Co.	North St. . . .	2	,,
Norton, E. & Son	Winsor St. . .	$\frac{5}{8}$	,,
Porter's Hotel	North Ave. . .	$\frac{5}{8}$	Désper.
Page, George G. & Son	Hampshire St. .	2	Worthington.
Pike, James	Church St. . .	1	,,
,, ,,	Farwell Place .	$\frac{3}{4}$	,,
Perry, C. E.	Raymond St. . .	$\frac{3}{4}$	,,
Ross, Mrs. H. P.	Broadway . . .	$\frac{5}{8}$	,,
Revere Sugar Refinery	Water St. . . .	3	,,
,, ,, ,,	,, ,, . . .	3	Union Rotary.
Reardon, John, & Son	Allston St. . .	4	Worthington.
Reversible Collar Co.	Arrow St. . . .	1	,,
Rogers, George M.	Washington St. .	3	,,
Rhoades, Silas, & Son	State St. . . .	2	,,
Shaw & Applin	Bridge St. . . .	$1\frac{1}{2}$	,,
Sortwell & Co.	Distillhouse St. .	2	,,
Squire, John P. & Co.	Gore St. . . .	2	,,
,, ,, ,, ,,	,, ,, ...	2	,,
,, ,, ,, ,,	,, ,, ...	1	,,
Sands, John L.	Walden St. . .	$\frac{3}{4}$	,,
St. Mary's School	Harvard St. . .	$\frac{3}{4}$	,,

List of Meters in use November 30, 1879 — Concluded.

METERS.	Locality.	Size.	Description.
		Inch.	
St. Mary's School (Catholic Church)	Norfolk St.	2	Worthington.
Stiles, John C.	Cambridge St.	2	,,
,, ,, ,,	Inman Sq.	$\frac{5}{8}$	Désper.
Shorey, George L.	Soden St.	$1\frac{1}{2}$	Worthington.
Scorgie, Wight, & Co.	Mt. Auburn St.	$\frac{3}{4}$	,,
Thayer, Henry, & Co.	Broadway	2	,,
Tower, Sylvester	,,	1	,,
Tug "Henry Chapel"	First St.	2	,,
Union Railway	Cambridge St.	1	,,
,, ,, (Washing Cars)	Dunster St.	$\frac{3}{4}$	,,
,, ,, (Engine Room)	,, ,,	$\frac{3}{4}$	,,
,, ,, (New Car House)	,, ,,	$\frac{5}{8}$	,,
,, ,, (Wooden Stable)	,, ,,	$\frac{3}{4}$	,,
,, ,, (Brick Stable)	,, ,,	$1\frac{1}{2}$	,,
,, ,,	Mt. Auburn St.	1	,,
,, ,,	Main St.	1	,,
,, ,,	North Ave.	2	,,
,, ,,	Baldwin St.	1	,,
,, ,,	Cambridge and Baldwin Sts.	1	,,
,, ,,	River St.	1	,,
Union Glass Co. (Packing room)	Webster Ave.	$\frac{5}{8}$	Ball & Fitts.
,, ,, ,, (Pot room)	,, ,,	1	Worthington.
Uhrig, Joseph	Main St.	$1\frac{1}{2}$	,,
Wyeth, H. M.	Dublin St.	$\frac{3}{4}$	,,
Walworth Manufacturing Co.	Main St.	$1\frac{1}{2}$	,,
Woodbury & Co.	Otis St.	2	Ball & Fitts.
Wilson, John, & Son	Brattle St.	1	Worthington.
Woods, George, & Co.	Main St.	2	,,

List of Drinking-Fountains, November 30, 1879.

Bridge Street, junction of Cambridge Street.
Broadway, south-west corner of Norfolk Street.
Brattle Square, east side of Brewer's Block.
Brattle Street, junction of Fresh Pond Lane.
Cambridge, south corner of Fifth Street.
Central Square, west side.
Central Square, east side.
Fort Washington.
Hampshire Street, junction of Broadway.
Inman Square, east side.
Main Street, junction of Front Street.
Main Street, junction of Mt. Auburn Street.
North Avenue, south-west corner of Walden Street.
North Avenue, north side, west of Cameron Street.
Putnam Avenue, south-west corner of Pearl Street.

Third Street, west side, north of Main Street.
Harvard Square at the flag-staff.

List of Stand-Pipes (for Street-Watering) Nov. 30, 1879.

Brattle Street, near University Press.
Brattle Street, corner of Sparks Street.
Brattle Street, near Fayerweather Street.
Brattle Street, near Fresh Pond Lane.
Bridge Street, junction of Cambridge Street.
Broadway, near Third Street.
Broadway, corner of Sixth Street.
Broadway, corner of Winsor Street.
Broadway, junction of Hampshire Street.
Brookline Street, corner of Putnam Avenue.
Cambridge, near Warren Street.
Cambridge, near Winsor Street.
Cambridge, at Inman Square.
Columbia, near Austin Street.
Concord Avenue, at junction of Garden Street.
Dana, at corner of Chatham Street.
Dublin, near Fitchburg Railroad.
Fifth, near Thorndike Street.
Gore, west of Third Street.
Green, near Western Avenue.
Harvard, corner of Prescott Street.
Inman, near Broadway.
Kirkland, near Quincy Street.
Main, near Portland Street.
Main, near Hancock Street.
Magazine, opposite Warland Street.
Mount Auburn, near Athens Street.
North Avenue, near Common.
North Avenue, corner of Sacramento Street.
North Avenue, near Forest Street.
North Avenue, near Beech Street.
North Avenue, near Spruce Street.
North Avenue, corner of Norris Street.
North Avenue, opposite Tannery Street.
Third Street, near Rogers Street.
Thorndike, near Third Street.
Western Avenue, near Howard Street.

New Main Pipe laid for Extensions and Renewals, from Dec. 1, 1878, to Nov. 30, 1879, inclusive, with the Number of Gates and Fire Hydrants used.

LOCATION.	Iron Pipe.		Gates.		Fire Hydrants.	
	Size.	Length.	No.	Size.	No.	Size.
	Inch.	Feet.		Inch.		Inch.
Sparks Street, near Vassal Lane	6	593	..	..	..	..
Garden Street, near Botanie Garden	6	486	1	6	..	..
Allen Street	4	133	..	..	..	..
Appleton Street	6	186	..	..	..	..
Orehard and Russell Streets	..	..	1	4	..	..
Austin Street, south of Columbia St.	6	86	1	6	..	..
Saville St.	4	40	..	..	..	..
School Street, between Pine and Austin Streets	4	224	..	..	..	..
Bow Street, east from Plympton Street	4	26	..	..	..	..
Plympton Street, from Bow to Harvard	4	386	2	4	..	..
Spring Street, eorner of Sixth Street	..	..	..	..	1	6
Harris Street, near Somerville Line	4	120	..	..	..	..
Harvard Street, near Dunster Street	6	50	..	..	1	6
Blanehe Street, between Front and Franklin Streets	4	196	1	4	..	..
First Street, between Otis and Thorndike (renewal)	6	312	..	..	1	6
Valentine and Brookline Streets	..	..	1	3	..	..
Decatur and Brookline Streets	..	..	1	3	..	..
Lopez and Brookline Streets	..	..	1	4	..	..
First Street, between Otis and Thorndike Sts. (raised)	6	177	..	..	..	..

Recapitulation.

	6 in.	4 in.	3 in.	Total Length.
Length of iron pipe in feet	1,713	1,125	..	2,838
Number of gates	2	5	2	9
,, ,, hydrants	3	..	..	3
Length of iron pipe raised	177	..	..	177

New Supplies.

Galvanized Pipe and Brass Fittings used from Dec. 1, 1878, to Nov. 31, 1879, inclusive.

	4 in.	2 in.	1½ in.	1¼ in.	1 in.	¾ in.	Total.
	Cast-iron.						
Length galvanized pipe	21	353	110	581	524	4,959	6,548
Number of supplies	1	3	1	3	4	113	125
,, stop and wastes	..	3	..	4	4	114	125
,, serew eoeks	..	3	1	4	4	101	113
,, sidewalk coeks	..	..	..	..	4	113	117
,, gates	1	..	..	..	..	..	1
,, faueets	..	..	..	..	..	14	14
,, stand-pipes	..	..	..	..	..	..	118

Stock in Shop and at the Yard.

1 large boom-derrick.
3 post-hydrants.
4 garden-hydrants.
4 hydrant-boxes.
2 lead-kettles and furnaces.
2 horses.
4 blankets.
1 pung.
1 large hand-pump.
9 pails.
2 casks of cement.
1 drilling-machine.
8 pipe-cutters.
8 pair of tongs.
4 blow-off wrenches.
2 hydrant-wrenches.
1 $1\frac{1}{2}''$ meter.
3 $\frac{5}{8}''$ meters.
3 1″-meter dials.
2 $1\frac{1}{2}''$ counters and ratchet movements.
3 $\frac{5}{8}''$ counters and ratchet movements.
222 seals.
2 small derricks.
4 chains.
33 old flush-hydrants.
4 large gate-boxes.
4 harnesses.
1 hay-cutter.
1 double-runner sled.
21 picks.
16 lanterns.
1 platform scale.
1 lathe, with the usual chucks and tools.
1 water-motor.
9 pipe-wrenches.
14 gate-wrenches.
2 1″-cock wrenches.
2 bench vises.
1 1″ meter.
6 2″ meter dials.
6 $\frac{5}{8}''$ meter dials.
2 drinking-fountains.
4 tool-chests.
2 meter-boxes.
6 small gate-boxes.
28 rises for gate-boxes.
2 oil-covers for horses.
4 wagons.
2 hand-carts.
8 thawing-pumps.
6 rammers.
1 set of pipe-taps, from $\frac{1}{8}''$ to 2″.
1 pipe-threading machine, with dies from $\frac{1}{2}''$ to 2″.
4 plates, from $\frac{1}{2}''$ to 1″.
3 monkey-wrenches.
3 2″-cock wrenches.
12 sidewalk-cock wrenches.
2 2″ meters.
3 $\frac{3}{4}''$ meters.
2 $1\frac{1}{2}''$ meter dials.
3 2″ counters and ratchet movements.
1 1″ counter and ratchet movements.
664 pounds lead.

Statement of Stock on Hand December 1, 1879.

For Street Mains (Iron Pipe and Fittings).

Number of—	48 in.	30 in.	24 in.	20 in.	16 in.	12 in.	10 in.	8 in.	6 in.	4 in.	3 in.
Straight pipes (12 feet each)	2	25	28	18	4	24	107	16	241	5	3
Elbows	..	..	..	..	..	..	..	..	..	4	..
Bends (1-36″)	..	..	2	2	1	..	4	..	15	..	..
Y branches	..	..	1	..	..	1	..	..	..	..	..
Sleeves	..	2	4	8	5	3	8	2	6	5	..
Clamp sleeves	..	..	3	2	..	4	4	5	5	8	3
Drain offsets	..	..	..	..	..	..	..	..	24	..	..
Offsets	..	..	..	..	..	..	6	..	16	..	..
Gates	..	..	..	..	..	3	1	..	1	2	2
Check-valves (old)	..	..	2	..	..	..	..	..	..	..	..
Blow-offs	..	..	..	2-6″	2-6″	..	..	..	..	..	..
Caps	..	..	2	..	..	7	8	1	3	2	..
Plugs	..	..	..	..	..	..	..	..	..	..	..
Crosses	..	..	..	2-10″	1-12″	4-3″	8-6″	3-3″	9-4″	2-3″	..
	..	..	..	1-20″	..	1-4″	2-8″	1-8″	..	15-4″	..
	..	..	..	..	..	8-6″	2-10″	..	..	..	..
	..	..	..	..	..	5-10″	..	..	..	..	..
Reducers	..	..	1-10″	2-12″	..	2-10″	4-6″	1-6″	..	5-3″	..
	..	..	1-8″	1-8″	..	..	2-8″	..	..	..	..
Ts	..	..	3-6″	2-12″	7-6″	1-12″	19-6″	12-6″	18-6″	1-3″	..
	..	..	1-8″	3-20″	..	5-6″	..	..	1-4″	7-4″	..
	..	..	1-24″	2-6″	..	..	..	..	..	..	..

For Supplies (Galvanized Pipe and Brass Fittings).

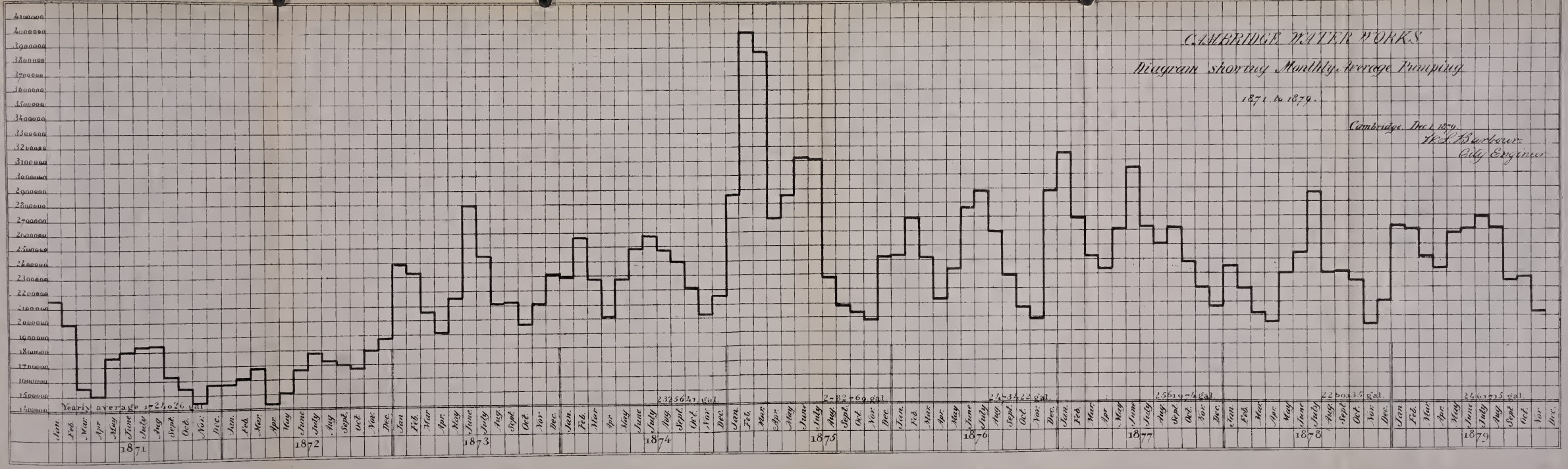
	2½ in.	2 in.	1½ in.	1¼ in.	1 in.	¾ in.	½ in.
Length of galvanized pipe	..	468	126	405	55	.	..
		4 Cast-iron.			5 Cast-iron.	10 Cast-iron.	30 Cast-iron.
Elbows	2	..	46	75	44	60	..
Street Elbows	..	..	..	..	10	74	..
Couplings	2	112	4	20	170	18	120
Unions for lead pipe	..	..	..	..	..	7	..
Unions	..	9	20	22	14	44	..
Stop and waste cocks	..	..	3	2	24	33	..
Screw-cocks	..	..	2	5	2	9	..
Corporation cocks	..	..	5	..	59	2	..
Screw-cocks for cement pipe	..	..	..	..	..	..	..
Sidewalk-cocks	..	..	..	..	46	14	..
Blow-off cocks	..	..	..	..	..	..	..
Hydrant cocks	..	..	2	..	..	3	..
Sill-cocks	..	..	..	..	..	3	..
Hose-bibbs	..	..	..	..	13	3	7
Air-chambers	..	..	..	..	48	20	60
Socket-ends	..	..	..	..	6	110	..
Lock-nuts	..	..	..	..	40	40	..
Nipples	2	43	20	90	12	14	120
Hose-nipples	..	..	..	..	..	..	..
Plugs	..	1	6	10	32	..	..
Bushings	6–1½″	6–1″ 10–1¼″	12–1¼″	6–¾″ 4–1″	..	..	..
Clips	..	..	..	..	40	10	..
Ts, malleable	..	..	..	1	1	168	60
,, cast-iron	..	320	135	125	141	490	10
Crosses, cast-iron	..	85	124	102	100	47	..
Reducing couplings	..	..	..	..	..	124–½″	..
Caps	..	..	..	..	..	..	10

CAMBRIDGE WATER WORKS

Diagram showing Monthly Average Pumping

1871 to 1879.

Cambridge, Dec 1 1879.
W. Y. Barbour
City Engineer



REPORT

OF

THE SCHOOL COMMITTEE FOR 1879.

The School Committee for 1879 respectfully submits the following Report.

As in former years, a large part of the duties of the Board has been performed under the supervision of the usual sub-committees, whose reports, in whole or in part, follow, with such brief suggestions and criticism as may be deemed of interest to the public, who are, and of right should be, so deeply concerned in the successful workings of our school system : —

The High School.

"The year's work of the High School has been highly satisfactory. The confirmed health of the Principal gives us reason to hope that the city may long enjoy his invaluable services. No change has taken place in the corps of teachers, except that in lieu of Mr. Edward Bradbury, whose resignation was tendered in June last, the Committee has chosen Miss Margarette M. Leighton, who fully justifies on trial the strong recommendations to which in great part she owed her appointment. The school has the very great advantage of being under the instruction and discipline of teachers who unite ample experience with a progressive spirit. The chief drawback to their efficiency is the amount of intractable material on which they must waste a part of their labor. No system of examinations yet devised has been adequate to exclude from the High School pupils who are not qualified for it, and though such pupils are gradually eliminated, and very few of them remain through the whole course, they are a clog and hinderance to the lower classes. The course of instruction is much more simple than it seems; for, though a glance at the course in print might suggest the idea of more work than could be thoroughly done by either teachers or pupils, still there is no individual scholar whose actual work comprehends a

greater variety of studies than is consistent with a respectable proficiency in each and all. It has been, however, the desire and aim of the Committee to contract rather than to enlarge the syllabus of studies. The Principal, at the request of the Chairman, offers the following suggestions, in aid of the essential reform in Reading, which has been repeatedly urged in the annual reports of the School Committee, and to which our Superintendent has devoted a great deal of judicious and successful effort.

"'I should be glad if I could in any way help on the reform which Mr. Cogswell and others have begun in regard to Reading in the Grammar Schools. The College calls upon the Preparatory Schools for more attention to the mother tongue. The High Schools must in their turn look to the Grammar Schools. There is no question, I think, that with all the improvements which the "cry for more English" has within a few years called forth in school and college, there is far less reading aloud than there was a generation or two ago. I can remember children who were called upon to read aloud three or four times each day, from the time when they began to read till about twelve years of age. Do children now always read once a day? Examinations have tyrannized over the more spiritual part of education (if I may so call it) and exalted the letter, from the Primary School up. Exact knowledge which can be measured by the scale of numbers has been crowding out culture. Yet who would not rather, if his child could have but one, that he should have an hour a day spent in reading, than lessons in any thing else? For books are the only universal food.

"'The reform has but just begun. Reading must take its old place, and be made *the* lesson of the day, nay, of each session. Every thing else must give place to it, not it to every thing else, as at present. Much reading will of itself make good spellers; for a child will unconsciously learn to spell by familiarizing his sight with the forms of words. He will be more likely, too, to become habituated to express himself properly by reading, than by the mere study of Grammar. But above all, by reading, more than in any other way, does the mind grow in intelligence; for as words are symbols of thoughts, by adding to his vocabulary you increase his range of thought and his power of apprehending the thoughts of others. Of course, with this reading there must be abundant questioning and comment by the teacher. The thought must be extracted, put into different forms, and made the text for written work in a great variety of ways. Poverty of expression, resulting in the use of feeble, senseless slang, is the direct result of little reading. The habits of talking acquired in the street can be best conquered by the habit of reading good books, till reading becomes a pleasure.'"

The Training School, after a hard fight for its continued existence, is still numbered among our schools, and the report from the Committee and the Principal of

The Training School

will give much information concerning this school, which needs only to be known to be appreciated.

"The Training School has during the year fully met the expectations of those who take a deep interest in its success. The graduating class, at the annual examination, gave evidence of thorough study, valuable practice, and faithful self-discipline; and those of them who have already become teachers are doing ample credit to their training for their work. With the indefatigable services of the Principal, on which the excellence of the system mainly depends, it is but simple justice to acknowledge the essential aid rendered by the several teachers in the Agassiz School, whose labor is much increased by their necessary oversight of the experimental teaching performed by the members of the Training School. At the same time, the endeavor has been on the part of all the teachers to make the Agassiz School, in every department, a model school. It is not, indeed, the only school in Cambridge that deserves this character; but the high standard of excellence reached and approached by so many of our schools is, it is believed, due in great part to the continuous influence issuing from the Training School and the schools immediately connected with it. An increasing number of our teachers there learned to teach; and beyond their circle many have, more or less directly, taken lessons there.

"The Principal of the Training School, at the request of the Chairman of the Committee, has prepared the following statement of her aims and her work: —

"'The Training School is in its tenth year of service, having been established in February, 1870. It then occupied the Riverside Primary Schoolhouse, and it was not until the autumn of 1875 that it was removed to its present location on Sacramento Street. It has had from the first a complete Primary Practice-School of three grades, and the classes have always been well filled. Since its removal to Sacramento Street, a sixth Grammar grade has been added, by which the advantages of the School have been very much increased.

"'The course of work in the Training Department divides itself into four distinct branches.

"'1. Elementary instruction in the studies taught in the Primary and Grammar Schools.

"'2. Instruction in subjects directly bearing on the work of teaching.

"'3. Instruction in Principles and in Methods of teaching.

"'4. Teaching in the Practice-Schools.

"'The first includes Reading, Spelling, Language, Number, Geography in all its forms, Free-hand Drawing, and Penmanship.

"'Instruction in these subjects covers, not only the Primary School courses, but is taken as far into Grammar School work as time will permit.

"'The second includes some studies which are to be directly retaught, as Morphological Botany and Zoölogy, and some which are intended to aid the teacher in the teaching of others, or to increase her general efficiency, as Perspective Drawing, Geometrical Drawing, Clay Modelling, Logic, Intellectual Science, Physiology.

"'The third takes up Principles of teaching as exemplified in Object-lessons, but equally present in all lessons; Methods of teaching, which are simply the concrete and varying forms of Principles; School Government and Organization, and School Discipline.

"'The fourth branch of work constitutes the actual testing of Principles and Methods, and the practical study of modes of Discipline, by the teaching and management of classes. This work is done under the criticism and advice of the Principal of the School and of the Assistant Teachers.

"'These form the "Course of Study and Practice" in the Training School.

"'The School aims to train its pupils rather than to instruct them. If all the subjects for instruction except such as have a technical relation to teaching work could be eliminated from the course, much time could be gained in the direct work of *training*.

"'The intellectual training is addressed to the Perception, the Imagination, and the Judgment and Reasoning. All the study and all the practice of teaching is so conducted as to bear directly upon one or more of those lines of development.

"'Physiology, whose immediate purpose is the physical care of the children, calls for the exercise of all of these. Zoölogy, intended in part for the direct instruction of the children in a subject most interesting to them, has also a great value in developing the powers of comparison and generalization. Studied under the most favorable conditions, it would educate in a marked manner to habits of discriminating observation. These can be, and are in a measure, cultivated by the examination of plates, and occasionally of specimens in the Museum of Comparative Zoölogy. Geometrical Drawing, which is mainly intended to enable the teacher correctly to execute designs for blackboard work, trains to keenness of perception, neatness of hand, and mathematical reasoning.

"'Not only is a well-informed and well-trained mind necessary to the teacher, — certain moral characteristics should belong to her as well.

"'No work can be done well which does not interest the worker, and that work is best done in which the interest springs from a genuine, unselfish love of the work.

"'It is necessary to a teacher's success that she should be able to de-

velop a love of children, and a generous, thoughtful zeal in working for them.

"'That belief in one's self and purposes, and the power of will, which mark the leader among men, equally establish the authority of the teacher. Moreover, any virtue which the teacher desires her pupils to possess must first be severely practised by herself, since her behavior is their constant standard of action. Among the minor morals should be counted a courteousness of manner toward her class which will give them a sense of self-respect that in early youth can be developed in no other way. Promptitude and neatness should characterize all her personal and business habits. An untidy floor, an ill-arranged blackboard, a delayed recess, very surely encourage slovenly habits of person and mind in the children familiar with them.

"'If a young girl be not naturally gifted or previously trained in these ways, the Training School can give her an opportunity to develop herself in these and similar directions.

"'It follows, of course, that if certain information, certain mental and moral training are essential to a teacher's success, a failure in any one direction would be fatal to it. It is the experience of every Training School that some persons, in the short time devoted to professional preparation, cannot make the required mental progress, or fail to kindle the necessary enthusiasm. Some cannot command the time, or have not the physical strength or mental aptitude, for the course of study.

"'A Training School, therefore, of necessity, works as a process of natural selection, in which, as always, the fittest live.

"'The Cambridge Training School has graduated a large number of pupils. Of these, nine only have never done any teaching work, and nearly all the remainder hold, or have held, permanent appointments in Cambridge.'"

Evening Schools.

"The Evening Schools during the last winter have not proved as satisfactory as in former years, — the number in attendance having been much smaller and more irregular than usual. One reason given was the unfortunate state of the weather during many of the evenings on which the sessions were held. But we fear that indifference to study, caused somewhat by the various entertainments which have increased of late among us, is the prime cause of that lack of interest which formerly existed. Whatever may be the reason assigned for this partial failure, the subcommittee, with consent of the School Committee and of the Board of Aldermen, and feeling that much labor and money were spent to but little profit, deemed it unadvisable to reopen the Evening Schools during the coming season. Some time, however, after this decision, a paper, signed by

about forty names, of persons of both sexes, living in Ward Three, desirous of attending Evening Schools in that district, was presented to the Committee, who at once made arrangements to continue the schools in that portion of the city.

"If at any time, in the early part of the season, a goodly number of persons in other parts of the city were to manifest a strong desire for the continuance of these schools, the Sub-Committee would gladly meet their wishes by the reopening of the schools in Districts One and Two. It is to be hoped that all for whom these schools were designed may, in the future, avail themselves of the privileges offered, and not allow another season to pass by without deriving some benefit from them."

The City School.

"Under the careful supervision of the Overseers of the Poor, the School at the Almshouse has diminished in the past two years from eighty or ninety to thirty-one in number. The school embraces among its members the children of the City's poor, and also those who are sent there by the authorities for truancy and stubborn, wilful disobedience to school-teachers and parents. Miss Butler has succeeded, by her uniform kindness and deep interest in the wayward ones, in making them neat, respectful, and obedient. The school will bear comparison with any school in the city in these respects.

"The school is divided into seven grades, including three primary and the four lowest grammar; and it requires a careful supervision of the teacher in order that each class may have its recitations in regular order. Miss Butler succeeds admirably in this, and each class has its intellectual food in due season. The organ is played by a colored lad, one of the wilful ones, and the singing evinces a good degree of excellence. In a recent examination by the Chairman of the Committee on City Schools, he found that the scholars had made a commendable progress in their studies."

The following report of the Committee on

Drawing

gives an interesting statement of the year's work in the Evening Drawing Classes.

"The Evening Drawing Schools for 1878–9 commenced on the 21st and 22d of October, 1878, and were continued for fifty evenings, under the charge of Messrs. E. Rose and Geo. E. Woodman, the teachers of the previous year. There were two departments, viz.: (1) The Mechanical Class, taught in Central Square Building in Ward 4; and (2) the class for Free-hand Drawing, in the City Building in Ward 1.

"The Mechanical Class was made up largely of those already engaged or about to engage in mechanical pursuits, and represented fourteen different callings, though the larger part were carpenters, cabinet-makers, or machinists. The object of this class is to give the pupil as thorough a knowledge as the time allowed will permit of the principles of plane Geometrical Drawing, Orthographic Projection, and Building Construction, which is so essential to the highest success of the practical mechanic. The whole number who attended this class more than two evenings was 60, and the average attendance was 23.68.

"The principal object of the class in Free-hand Drawing is to teach Industrial Design, such as designs for carpets, wall-paper, calico, &c. The number of pupils in attendance on this class for more than two evenings was 79, while the average attendance was but 32.28. This want of constant attendance in both classes is to be accounted for, in part, from the fact that many of the pupils are mechanics in the employ of others, whose business often occupies their evenings, and not unfrequently requires an absence from town, while others, it is to be feared, are absent for less important reasons. There is, however, a marked improvement in this respect in the school of 1879–80, which commenced in October last, and which it is proposed to continue for the same length of time as last year.

"Notwithstanding the hindrances referred to, the progress of the pupils has been very satisfactory, many of them having attained a high degree of success. And it is gratifying to know that at the annual exhibition of the Drawing Schools of the Commonwealth, held at Horticultural Hall, in Boston, in May last, our Evening Drawing Schools stood high on the list of those which received honorable mention for excellent work."

The Committee on

Truant-Officers

presents the following report: —

"The Truant-Officers, so far as we can judge, have been faithful, earnest, and efficient workers in the interest of our public schools. The testimony of superintendent, teachers, and parents confirms this statement.

"We think the appeal made to parents last year, to give these officers their help and confidence, was not made in vain; for there seems to be a growing feeling in the community, that many parents are being helped by these officers to educate and govern children who were growing almost lawless.

"The statistics of the present year vary materially, in several items, from the last. For example:

Whole number of complaints to officers	1878	7,822
„ „	1879	8,634
Absent on account of sickness	1878	1,432
„ „	1879	1,710
„ destitution	1878	591
„ „	1879	825
Truants, first offence	1878	376
„ „	1879	311

"From the above facts we gather these results: that the Truant-Officers have had 812 more complaints to look after than last year, and that there have been 65 less truants. This, we think, should confirm their claim on parents for help and confidence, which we earnestly hope will be freely given."

Rules and Regulations.

"A new and revised edition of the Rules and Regulations was printed during the year, under the direction of the Committee, and by the generosity of Mr. John Wilson, a member of the present board, without expense to the City. This edition has been prepared with such care that the Committee fondly hopes that it may stand unchanged for a long time, especially as frequent change makes it difficult for the Committee and teachers alike to remember what the rules are."

Schoolhouses and Hygiene.

"Since the careful report presented to the School Board in March, 1876, by a special committee upon the sanitary condition of the schoolhouses at that time, some marked improvements have been made. This gives us reason to hope that by keeping the importance of the subject of the sanitary condition of our schoolhouses constantly in view, many more and much-needed changes will be made.

"The most important improvement made during the past year is at the Shepard Grammar School; where the privies which have been the cause of so much complaint for years have been removed and a most admirably constructed 'school sink' built, which appears to work to the satisfaction of all who have seen it. It is to be hoped that a like improvement may be made at the Washington, Allston, and Thorndike Grammar Schools, where the foul-smelling and filthy privies are a nuisance, both to the occupants of the schoolhouses and to the neighbors.

"The warming of our schoolhouses is not yet wholly satisfactory. In some instances the schoolrooms are over-heated at the opening of the morning session; while in others the temperature falls below what it should be before noon. During the present month a teacher in one of the Primary

Schools reports the temperature in her room, fifteen minutes before nine, as being 114°. This, we are glad to say, is the highest degree of heat reached in any of the schools; but in other schools the reports show a degree of heat which is not conducive to the health or comfort of the teachers and scholars, to say nothing of the waste of fuel. It is to be hoped that some means may be devised by which our schoolhouses may be more evenly warmed. As has been stated in the report made by the special committee on this subject, in 1876, 'It is plain that hygienic laws cannot be constantly violated in schoolhouses where hundreds of children spend so many hours daily, without causing serious apprehensions of evil in the mind of every intelligent person.'"

We present no report from the committee on

Salaries,

but their efficient work of the past has been continued through the present year, as the salary list will show some reduction from that of the preceding year.

The important topic of

Text-Books

is discussed in the report of the committee thereon.

"A careful examination was made, in the spring, of the courses of study in the Primary and Grammar Schools, and certain changes introduced, involving slight changes of text-books. These changes were not in the way of experiment, but expressed the results of experiment which had long been under observation, both in our schools and elsewhere. They did not aim at overturning old methods, but at the wise application of settled principles. They may be noted as follows (beginning with the work in the Primary Schools): —

"1. The use of text-books in teaching reading has been limited, and the blackboard has been made more prominent. Instead of a mechanical repetition of phrases in a book, which finally lose their freshness and develop no faculty in the reader, there has been more unconventional and familiar acquaintance formed through following the teacher as she notes down sentences on the board.

"Again, a variety of reading has been secured by the use of supplementary books, and an effort has been made to give the child's mind something to work upon beyond the mere arrangement of words and sounds. A single text-book has been used each year and has served as a drill book, but the

blackboard exercises and the supplementary reading have saved it from becoming a tiresome book to a bright child and a hated task to a dull one. The reading books used in the Primary Schools have been changed in the third and second classes; the Franklin Primer and Franklin Second Reader being substituted for Hillard's series. In the Grammar Schools the Franklin Fourth Reader has taken the place of Hillard's Fourth, and Munroe's Fifth Reader the place of Hillard's Intermediate. The object of these changes has been to secure a more even and steady gradation, and to take advantage of improvements introduced into an old and familiar series; but changes have been made only in classes where new books were to be bought.

"2. Writing and spelling have been distinctly connected in the course of study, as they have practically for some time in methods of teaching. From the very first the child is made to use his slate in copying words and sentences, the constructive faculty being brought into play at once.

"3. Directly connected with this is the study laid down throughout the Primary and Grammar courses under the general name of language. As soon as the child enters school the teacher begins systematically to educate it in the use of language, both orally and in writing. She begins with talks about familiar things, encouraging conversation with her; she reads stories and requires the pupil to tell them in his own language; she shows pictures and the pupil describes them. Then, as the pen becomes familiar, the pupil is required to write instead of to talk, and to write also from dictation. From this point the study constantly grows more complex. Sentences are written, consisting of simple words, — sentences containing names of the days and months, and proper names of persons and places, dates, holidays, and proper adjectives; variations in language are rendered familiar by use; stories suggested by pictures are written out; letter-writing is practised and short compositions are written, the length increasing each year. The pen is practised in connection with other studies and the pupil familiarized with business forms, such as letters, receipts, promissory notes, etc.

"4. A system of reviews in the Grammar Schools has been made more prominent, by which each class reviews the more important part of the work of preceding classes.

"5. The memory, besides being cultivated in the ordinary course of study, is, in the Grammar School, charged with a slight but regular burden in carrying selections of literature. At the beginning of each term a few pieces of prose or poetry are selected to be learned and recited from week to week, in whole or in part, by each scholar. Near the end of the term each scholar writes from memory one of the pieces, and the exercise is to show both penmanship and accuracy in memorizing.

"These points, it will be observed, indicate, not novel or experimental

changes in methods of education, but the systematic application of principles which are well recognized and have been gradually reached in practice. All of the methods have for some time been tried and proved in our schools; but the uniform practice is now, for the first time, made a formal part of the published course of study. It is the policy of the committee to introduce changes slowly, and only as they have been approved by trial under the eye of the superintendent."

Music.

It is with pleasure that we introduce into our report a communication addressed to the Board by the singing-master, Mr. Lincoln, a careful perusal of which cannot fail to enlighten the public mind in regard to the uses and benefits of a musical training in our schools.

"It has been urged that music is a branch of study more ornamental than useful; which can be dispensed with altogether, or the expenditure in its behalf be greatly reduced. Yet, as a matter of fact, no such claim is made among prominent educators, or by those best informed on matters pertaining to public instruction. On the contrary, here in Massachusetts, music never stood higher on the list of studies than now; was never so thoroughly taught as now, never so justly appreciated as now. Our University has its Professor of Music, within the year has found it necessary to employ in addition a tutor in singing, and is granting diplomas to such as successfully complete the course prescribed.

"The Empire of Japan has just concluded a contract with Mr. L. W. Mason, late superintendent of music in the schools of Boston, to introduce our system of musical instruction into that country. Arrangements are making at Tokio, on the most liberal scale, to furnish the means and appliances needed in the line of his profession, to promote his personal comfort, and to add dignity to the office he assumes.

"Music has become, may we not say, the chief amusement of the people. As such it is innocent, it leaves no sting behind; and it is not every amusement of which this can be predicated. The love for it, moreover, in the household is limited only by the amount of talent in that direction possessed by the members of the family, or by their ability to procure for themselves the means of its gratification.

"But it would be taking a partial view of the matter, were we to regard it merely in the light of a recreation. As a branch of study its value is beyond question. It cultivates the ear, informs the taste, trains the faculties of the mind, develops and invigorates the powers of the body. Of what other study can this be affirmed in an equal degree? Viewed simply as a resource for earning one's living, it is safe to say that a knowledge of

music gives direct support to a vastly greater number of men and women than does an acquaintance with any one of the so-called higher studies pursued in our schools.

"Consider the interests of music in their financial aspect. See the amount of capital invested in the manufacture of pianos, organs, band and orchestral instruments; the printing and engraving of sheet music and music books; the various newspapers or journals devoted exclusively to musical matters; the fabulous sums lavished upon distinguished singers or players, who fill our largest halls at their concerts with eager listeners.

"Pianos and parlor organs are almost as common as tables and bureaus; or, at least, it may be said with truth that a house without a musical instrument of some sort is a rarity. A family in which there is no music and no love for it must certainly be accounted unfortunate in that respect.

"See how largely dependent we are upon the Germans, in filling the ranks of our bands and orchestras; because, music having been for so many years a regular study in their common schools, enjoying all the time the highest consideration in the community at large, they have become superior to us in the art, and are, for the present, beyond our competition.

"Look at our conservatories and colleges of music, which already surpass those of Europe in the number of their students, and bid fair, in due time, to rival them also in the excellence of the instruction furnished, as well as in the talent and proficiency of their graduates.

"The complaint is sometimes made against our schools, that children are not taught what will be of practical use in after-life. What is learned of some subjects, it is said, needs to be so modified before it can be available in practice, that, aside from the mental discipline thereby secured, it may be a question whether time so spent could not be better employed in other ways. Such is not the case with music. Whatever is gained in that direction, though it be only the power of singing the scale, is immediately useful, and will form one of the inevitable steps to be taken sooner or later if one desires to become a musician.

"Given the requisite amount of talent, with corresponding application under competent instruction, and the pupil finds himself in the possession of an accomplishment more or less adequate to his support in life, while leaving him opportunity to attend to other business. But whether he turn this acquirement to account pecuniarily or not, his knowledge and skill in the art will continue an unfailing source of delight to himself and friends as long as life and health remain.

"Is there one of us who, when his son leaves school to take his place in society, would not be glad to know that he had gained a taste for music, and some knowledge of it? Should we not consider it, in some sense, as a safeguard to restrain him from the pursuit of other and less salutary modes of enjoyment? Where there is music at home and an appreciation

of it, the various forms of dissipation, to which, for want of something better to occupy their leisure hours, the young are so prone, will lose their charms, and fail to make felt their pernicious attractions.

"All this goes to show how deep a root music has taken among us, how rapidly it is growing, how widely extending, and how it demands — and reasonably, too — a fostering hand and liberal support from those who are charged with the administration of the interests of public education.

"Here, in Cambridge, the singing-master is required to spend in active teaching *seven half-days* out of ten in the week with the Grammar Schools alone; the remaining three half-days are devoted to similar work in the Primary Schools."

An important part of the labors of the Board is performed by the Committee on

Accounts and Estimates,

and a comparison of the cost of the school system for the present year with former years will show that the Committee having charge of this department has faithfully performed its duty.

To secure uniformity in the proficiency required for promotion from one grade to another, or from one school to another, is greatly to be desired, and the report of the Committee on

Examinations and Promotions

shows how this result has been sought. The leading feature in the work of the Committee on Examinations and Promotions during the year was the change in the manner of conducting the examination of the first classes in the Grammar Schools, for diplomas, and for admission to the High School.

"Formerly each first class was examined at its own schoolhouse by its own teachers. Now the classes from all the Grammar Schools assemble at the High School, where they are assigned to various rooms alphabetically, and their examination is supervised by teachers selected from the High School, as well as the Grammar Schools.

"Each scholar's paper bears a number, but not his name; and at the close of the examination the papers are marked by the Grammar School masters and their assistants, — the work being so distributed that one teacher marks the same question on all the papers. In this way a uniform standard is obtained throughout the city, and the results of the examination last summer are believed to have been very satisfactory.

"In accordance with the recommendation of the Committee on Examinations and Promotions, the usual public examination of the Primary

Schools before the Christmas vacation has been postponed this year to the close of the spring term, — a season more favorable for the attendance of young children.

"It is expected that this change will also have a beneficial effect upon the examinations of the Grammar Schools."

Sewing.

"The study of sewing was introduced into one of the Grammar schools in the fall of 1877, and continued as an experiment for two years. At the end of that time the Committee in charge judged that, for purposes of experiment, sufficient time had been allowed, and being satisfied that the results justified an incorporation of the study into the school system, brought in a resolution to that effect. The full Board, however, declined to adopt the study, and it has now been discontinued."

It is with pleasure that we again note the fact that our roll of teachers embraces nearly the same names; for permanency of employment, coupled with zeal and ability, make the perfect teacher.

The evils of annual elections, so possible, and perhaps so actual, in many other towns and cities, are reduced to the minimum in Cambridge; for the supply of really good teachers so falls below the demand therefor, that those who possess an average degree of power, coupled with a love for their work, are certain, under the conservative influence of our Board, to remain untouched in their positions; but, on the other hand, we wish it clearly understood by the public, and by teachers in our employ, that a teacher who for any length of time shall fail to maintain the proper standard of excellence in school work will certainly be promptly removed. There is no duty of the Committee so painful and disagreeable as that of discharging incompetent teachers; but it is a duty to whose performance we are bound by the requirements of the important trust reposed in us by the suffrages of our fellow-citizens. The best and surest way to avoid the exercise of this hard duty is to use the utmost care and precaution in our selection of teachers, and, with a view to this, the Committee this year created a new Committee, to be called the Committee on Examination of Teachers, to which all nominations of teachers for the Primary and Grammar Schools shall be referred: that this Committee may investigate the qualification and character of the nominees, and report to the full Board before final action is taken thereon.

An important and much mooted question among modern educators has been, What are the rights of an industrious and studious majority of scholars as compared with those of a very small and turbulent minority? The teacher's time occupied more or less in conquering two or three noisy and mutinous boys is so much time lost to those pupils who are tractable, and desirous of improving their opportunities, and even if her efforts to promote good order and discipline are successful, it is only with a positive loss of time and strength. Too often is it that the material fruits of a school session are lost by the wilfulness or obstinacy of the few. Of all the plans proposed to obviate this, the most feasible seemed to us to be to establish an ungraded school for incorrigible scholars. To further this plan, late in the year, a sub-committee was appointed, with authority in its discretion to provide for such a school at some central point of the city, and to arrange a series of rules for its government. This Committee is still considering the question of the present necessity of establishing such a school, its location, and the number of pupils who would probably be sent to it from the different schools of the city. Doubtless at an early day measures will be taken to start this school, and it is hoped immediate good results will ensue, not merely in an increased efficiency in our school system, but also in the removal of vice, and in the improvement of the moral tone of the schoolroom.

We must again pay our tribute to the valuable services of our Superintendent, to whom is due so much of the success of our local schools, of which we are so justly proud. In these days of advancing education, when new and diverse plans and methods of instruction are claiming investigation and attention, it is important to have some one of clear view and experienced judgment to examine and test these various theories, and, applying to them the stern gauge, the "survival of the fittest," introduce them boldly and yet cautiously into our own schools. Such an educator we have in our Superintendent, and in the multiplicity of detail of school work he is ever found watchful for the best interests of our system, and desirous to keep our schools in the front rank.

We cannot close our report without calling attention to one more subject of vital moment to the success of education, and that is a quick and ready sympathy between the parents and

the teachers, and a keen and personal interest of parents in the school work. Nothing so much quickens the teacher's courage and enthusiasm as the feeling that the home influence is exerted in the same direct line as that of school; and frequent visits of father or mother to the schoolroom delight the children and inspire them to a desire to excel in what pleases their parents.

There should be an active alliance between the school and the family, for the former is the conserver and benefactor of the latter. We sincerely hope that the citizens of Cambridge, especially those having children in the schools, will feel that they are always welcome guests, and that their visits and the interest shown thereby are a benefit to both teacher and pupils in their work.

The Committee earnestly commends the public schools to the guardianship and protection of the citizens of Cambridge, trusting that the same good results which have flowed from them in the past may continue in the future.

SAMUEL L. MONTAGUE, *Chairman, ex officio.*

HORACE E. SCUDDER,
JOHN WILSON,
ANDREW P. PEABODY,
EDWARD R. COGSWELL,
JAMES H. HALL,
SUMNER ALBEE,
GEORGE A. COBURN,
JOHN O'BRIEN,
OTIS S. BROWN,
WILLIAM H. ORCUTT,
ASA P. MORSE,
WM. FOX RICHARDSON,
EDMUND H. STEVENS,
WILLIAM A. START,

School Committee.

TABULAR VIEW

OF

THE PUBLIC SCHOOLS OF CAMBRIDGE,

JANUARY 1, 1880.

Name of School.	Teachers.	Salary.	No. of Scholars, Jan. 1, 1880.
High School,	Lyman R. Williston.....	$2,800	464
	William F. Bradbury.....	2,500	
	John Orne, jun.....	1,700	
	Theodore P. Adams.....	1,700	
	Solon F. Whitney.....	1,700	
	Mary F. Peiree	900	
	Emma A. Seudder.....	800	
	Hannah Gleason.....	800	
	Emma F. Munroe.....	800	
	Mary C. C. Goddard.....	800	
	Julia A. Keeler.....	800	
	Margarette M. Leighton...	800	
Allston Grammar,	Benjamin W. Roberts.....	1,900	49
	Lizzie B. Winnett	700	
	Emily R. Pitkin.....	620	
	Lucia E. Whiting.....	620	
	Hannah L. Hill.....	620	
	Ida G. Smith.....	620	
	Nettie Sargent.....	620	
	Caroline Close.....	620	
	Josephine H. Davis	620	
	Lizzie M. Diekson.....	620	
	Emma A. Eaton.....	570	
	Emma H. White.....	520	
Harvard „	Aaron B. Magoun.....	1,900	565
	Ada H. Wellington.....	700	
	Margaret B. Wellington...	620	
	Lydia S. King.....	620	
	Susan F. Athearn.....	620	
	Margaret R. Hodgkins.....	620	
	Annie M. Leland.....	620	
	Susan E. Merrill.....	620	
	Emily F. Damon.....	620	
	Sarah E. Golden.....	620	
	Ellen Merrick	620	
	Mary F. Emerson.....	620	
	N. Maria Stevens.....	620	

TABULAR VIEW OF THE PUBLIC SCHOOLS. — *Continued.*

Name of School.	Teachers.	Salary.	No. of Scholars, Jan. 1, 1880.
Putnam Grammar,	James S. Barrell.....	$1,900	412
	Helen B. Furber.....	700	
	Anna B. Josselyn.....	620	
	Addie Stone.....	620	
	Eliza M. Hussey.....	620	
	Augusta G. Mirick.....	620	
	Annie Knapp.....	620	
	Eliza S. Getchell.....	620	
	Maria E. Spare.....	620	
	C. E. Doran.....	620	
Shepard „	Edward O. Grover.....	1,900	436
	Fannie A. Cooke.....	700	
	Julia H. Osgood.....	620	
	Sarah A. Rand.....	620	
	Evelyn J. Locke.....	520	
	Emily F. Fessenden.....	620	
	Cora M. Wheeler.....	620	
	Ruth E. Lander.....	620	
	Dana A. Evelyth.....	620	
	Anna Osgood.....	620	
	Nellie A. Hutchins.....	620	
Thorndike „	Ruel H. Fletcher.....	1,900	556
	Ellen M. Parker.....	700	
	Martha A. Martin.....	620	
	Mary E. Nason.....	620	
	Isabella B. Tenney.....	620	
	Ella W. Clark.....	620	
	Grace W. Fletcher.....	620	
	Emma A. Hopkins.....	620	
	Abbie A. K. Howard.....	620	
	Lydia A. Whitcher.....	620	
	Abby S. Taylor.....	620	
	Elizabeth P. Regal.....	570	
	Mary A. A. McCarthy.....	520	
Washington „	Daniel Mansfield.....	1,900	549
	Caroline J. Dresser.....	700	
	Lucy A. Downing.....	620	
	Adeline M. Ireson.....	620	
	Abby M. Webb.....	620	
	Adelaide A. Keeler.....	620	
	Adelaide A. Keith.....	620	
	Adelia Dunham.....	620	
	Emma P. Eaton.....	620	
	Eliza A. Hale.....	620	
	Caroline H. Hazeltine.....	620	
	Carrie A. Cooke.....	620	
	Mary A. Wheeler.....	520	
	Susan E. Wyeth.....	620	
Webster „	John D. Billings.....	1,900	613
	Mary C. Cook.....	700	
	Gertrude E. Hale.....	620	
	Louise C. D. Harlow.....	620	
	Esther F. Hannum.....	620	
	May E. Towle.....	620	
	Charlotte M. Chase.....	620	
	Anna S. Lamson.....	620	

TABULAR VIEW OF THE PUBLIC SCHOOLS. — *Continued.*

Name of School.	Teachers.	Salary.	No. of Scholars, Jan. 1, 1880.
Webster Gram'r (*con.*)	Clara E. Matchett.....	$ 620	
	Carrie M. Kingman.....	620	
	Alice Gray.....	620	
	Marion H. Burnham.....	620	
	Carrie W. Osgood.....	620	
	Lizzie C. Capen.....	620	
	Ella E. Buttrick.....	620	
Boardman Primary,	Mary Agnes Lewis.....	600	226
	Sarah E. Stewart.....	580	
	Augusta L. Balch.....	580	
	S. N. Chamberlain.....	580	
	Evelyn A. Sawyer.....	580	
Brattle „	Lucy C. Wyeth.....	580	47
Bridge „	Elizabeth E. Dallinger.....	600	78
	Emily C. Dallinger.....	580	
Dana „	Maria F. Williams.....	600	105
	Abby A. Lewis.....	580	
Dunster „	Sarah B. Waitt.....	580	53
Felton „	Georgiana L. Backus.....	600	99
	Frances Fabyan.....	580	
Gannett „	Estelle J. French.....	600	184
	Sarah J. Davis.....	580	
	Anna M. Jones.....	580	
	Charlotte E. Mitchell.....	580	
Gore „	Frances E. Pendexter.....	600	422
	Addie M. Bettinson.....	580	
	Mary A. Bourne.....	580	
	Nellie L. Pike.....	580	
	Sarah D. Graham.....	580	
	Mary A. Shepard.....	580	
	Mary E. Mulloney.....	500	
	Maria J. Bacon.....	400	
Harvard „	Helen M. Ward.....	600	87
	Ellen A. Cheney.....	580	
Holmes „	Marianne M. Webb.....	600	139
	Eunice W. Field.....	580	
	Mary L. Bullard.....	580	
	Louisa G. Matchett.....	580	
Mason „	M. Lizzie Evans.....	600	118
	Alma A. Smith.....	580	
Otis „	Luvia Goodnow.....	600	430
	Martha H. Butler.....	580	
	Kate F. Wellington.....	580	
	Carrie H. Smith.....	580	
	Mary E. Smallidge.....	580	
	Fannie Allen.....	580	
	Ellen C. Walsh.....	580	
	Josephine M. Doherty.....	580	
Putnam „	Nellie F. Ball.....	580	55
Quincy „	Charlotte E. Jewell.....	600	76
	Talulah G. Abercrombie...	580	
Reed „	Lucy T. Sawyer.....	600	98
	Hattie N. Keyes.....	580	
Riverside „	Elizabeth A. Tower.....	600	211
	M. Louise Akerman.....	580	
	Emma M. Newton.....	580	
	Florence M. Hayward.....	580	

TABULAR VIEW OF THE PUBLIC SCHOOLS. — *Continued.*

Name of School.	Teachers.	Salary.	No. of Scholars, Jan. 1, 1880.
Sargent Primary,	Frances J. Harrod.....	$ 600	150
	Mary A. Brown.....	580	
	Myra I. Ellis.....	500	
Willard „	Amelia Wright.....	600	402
	Mary E. Sawyer.....	580	
	Mary Ann Tarbell.....	580	
	Kate M. Lowell.....	580	
	Evelina Brooks.....	580	
	Laura Wright.....	580	
	Grace R. Woodward.....	580	
	Louise W. Harris.....	580	
	Hattie A. Hamlin.....	500	
Wyman „	Fannie E. M. Dennis.....	600	164
	Charlotte A. Ewell.....	580	
	Martha C. Dickman.....	580	
Training School,	Anna C. Sullivan.....	900	214 [1]
	Ella C. Whitney.....	620	
	Emma B. Alley.....	580	
	Jenny Prescott.....	580	
	Sarah M. Jaques.....	400	
City „	Harriet A. Butler.....	620	31

TEACHER OF SINGING. — Nathan Lincoln $1,500

SUPERINTENDENT OF SCHOOLS. — Francis Cogswell 2,700

SUMMARY.

Number of Pupils in High School	464
„ „ „ „ Grammar Schools	3,670
„ „ „ „ Primary Schools	3,346
	7,480

COST OF INSTRUCTION.

High School	$16,100	for each pupil	$34.70
Grammar Schools	64,200	„ „ „	17.49
Primary Schools	40,680	„ „ „	12.15
Music	1,500		
Salary of Superintendent	2,700		
	$125,180	for each pupil	$16.73

Number of Pupils belonging to Public Schools, Jan. 1, 1880	7,480
„ „ „ „ „ „ „ Jan. 1, 1879	7,423
Increase	57

Average annual increase of Pupils from 1860 to 1874 inclusive	246
Decrease of Pupils, 1875	268
Increase „ „ 1876	6
Decrease „ „ 1877	81
„ „ „ 1878	50
Increase „ „ 1879	57

Number of Schools	29
„ „ Teachers	172

[1] Including the Training Class (10), a Grammar Class (43), and Primary Classes (161).

REPORT

OF

THE SUPERINTENDENT OF SCHOOLS.

To the School Committee of Cambridge: —

GENTLEMEN, — I respectfully submit the following as my Report for the year ending Dec. 31, 1879, it being my Fifth Annual Report, and the Eleventh of the Superintendent's Annual Reports.[1]

SUMMARY OF STATISTICS

For the School Year ending Dec. 31, 1879.

I. — POPULATION.

Population of Cambridge by the State census for 1875	47,838
The number of children in the city between five and fifteen years of age, May 1, 1879, as reported by the officers appointed to ascertain the fact	8,885

II. — SCHOOLS.

1 High School.	1 Training School.
7 Grammar Schools.	1 Evening School.
20 Primary Schools.	2 Evening Drawing Schools.

Whole number of Day and Evening Schools 32

III. — SCHOOLHOUSES.

For the High School	1
For the Grammar Schools	7
For the Primary Schools, including Training School	18

[1] To the number of my report I have added the number belonging to it in the series of reports which have been issued. If this is regularly done, each report will show the length of time since the establishment of the office.

IV. — Teachers.

Number of teachers in High School	12
Male teachers, 5; female teachers, 7	
Number of teachers in Grammar Schools	89
Male teachers, 7; female teachers, 82.	
Number of teachers in Primary Schools, including Principal of Training School	71
Number of teachers in Evening Schools	20
Number of teachers in Evening Drawing Schools	4
Whole number of teachers in Day Schools, including teacher of music	173
Number of resignations during the year	11
Number of permanent appointments	11

V. — Pupils.

Number of different pupils registered in the Day Schools during the year	8,500
Average number of pupils belonging to the Day Schools during the year	6,957
Average daily attendance of pupils in the Day Schools	6,385
Per cent of attendance in the Day Schools	91.8
Average number of pupils belonging to the High School	455
Average daily attendance in High School	424
Per cent of attendance in High School	93.2
Average number of pupils belonging to Grammar Schools	3,352
Average daily attendance of pupils in Grammar Schools	3,117
Per cent of attendance in Grammar Schools	92.9
Average number of pupils belonging to Primary Schools	3,140
Average daily attendance in Primary Schools	2,835
Per cent of attendance in Primary Schools	90.2
Number of different pupils belonging to Evening Schools	627
Average attendance in Evening Schools	188
Number of different pupils belonging to Evening Drawing Schools	139
Average attendance in Evening Drawing Schools	56
Number of pupils between five and fifteen years of age in actual attendance upon the Day Schools, May, 1879	6,670
Number of pupils over fifteen years of age in actual attendance upon the Day Schools, May, 1879	614
Number of pupils under six years of age in actual attendance upon the Day Schools, May, 1879	415
Number of children in the city between five and six years of age, May, 1879	872

Number of pupils graduated from Primary Schools, July, 1879 .	772
Number of pupils graduated from Grammar Schools, July, 1879 .	204
Number of pupils graduated from High School, July, 1879 . . .	64
Number of pupils from High School admitted to college, July, 1879	9
Number of pupils graduated from Training School, July, 1879 .	8
Number of pupils admitted to Grammar Schools, September, 1879 .	817
Number of pupils admitted to High School, September, 1879 . .	152
Number of pupils admitted to Training School, September, 1879 .	10
Whole number of Private Schools	20
Number of pupils in Private Schools	1,610

Table Showing the Number in Each Course in the High School, December, 1879.

Year.	Classical Course.	Complete English.	Shorter English.	Number of Divisions.
Fifth	20	. .	. .	1
Fourth	29	30	. .	3
Third	29	58	8	4
Second	104		26	6
First	128		32	6

Table Showing the Number in Each Class in the High School, December, 1879.

Year.	Boys.	Girls.	Total.	Per cent.
Fifth	11	9	20	.043
Fourth	24	35	59	.127
Third	42	53	95	.204
Second	59	71	130	.280
First	80	80	160	.342
Total	216	248	464	

Table Showing the Number in Each Class in the Grammar Schools, December, 1879.

[The numbers in this and the following table include only those scholars who were present at some session during the first two weeks of December; while those in the "Tabular View" include all who belonged to the schools, though absent on account of sickness or for other cause.]

Class.	Boys.	Girls.	Total.	Per cent.
First	128	178	306	.083
Second	224	230	454	.123
Third	262	253	515	.140
Fourth	358	366	724	.197
Fifth	375	379	754	.205
Sixth	454	455	909	.248
Total	1,801	1,861	3,662	

Table Showing the Number in Each Class in the Primary Schools, December, 1879.

Class.	Boys.	Girls.	Total.	Per cent.
First	508	493	1,001	.310
Second	493	502	995	.308
Third	616	617	1,233	.381
Total	1,617	1,612	3,229	

The statutes require that "the School Committee shall annually, in the month of May, ascertain, or cause to be ascertained, the names and ages of all persons belonging to their respective towns and cities on the first day of May, between the ages of five and fifteen years, and make a record thereof."

The following is a summary of the returns for 1879 made by the officers appointed to ascertain the required facts: —

Number of children in the city between five and fifteen years of age, as reported by the officers	8,885
Number in Public Schools between five and fifteen years of age, as reported by the officers	6,634
Number in Private Schools between five and fifteen years of age, as reported by the officers	1,281
Number not attending school between five and eight years of age, as reported by the officers	559
Number not attending school between eight and thirteen years of age, as reported by the officers	156
Number not attending school between thirteen and fifteen years of age, as reported by the officers	255
Whole number not attending school between five and fifteen years of age, as reported by the officers	970

VI. — Finances.

Cost of instruction in Day Schools [1]	$132,570.49
Text-books and stationery for Day Schools	3,272.12
Incidental expenses for Day Schools	1,383.90
Cost of Evening Schools	2,070.91
Cost of Evening Drawing Schools	722.17
Care and repairs of schoolhouses	20,969.60
Amount expended for alterations of schoolhouses	1,514.72
Total expenditures for all school purposes	$162,503.91
Deducting receipts from the Hopkins Fund ($783) and for tuition of non-resident pupils ($638.33), actual costs of the schools to the city	$161,082.58
Assessed value of real and personal estate, May, 1879	$49,238,098.00
Ratio of expenses for school purposes to the valuation of 1878	.0032

The average daily attendance in our schools for the past four years has been nearly the same, while their cost to the city has been reduced more than forty-eight thousand dollars ($48,545.47). A reduction of about six thousand dollars ($6,282.26) was effected within the past year. The other statistics for 1879 are so nearly like those of 1878 that no comparison need be made.

[1] This item is made up of the salaries of the teachers, superintendent, and truant-officers. That of the truant-officers ($2,700) is included this year for the first time.

Reading.

Important changes were made in the course of study in reading at the beginning of the school year in September last. Not only were different reading-books adopted for several of the classes where new ones were to be bought, but there was a radical change in the method of teaching reading to beginners. Under the old plan of study, the elementary sounds and names of the letters were first learned, and Hillard's Primer was the only authorized reading-book for the first year. The following directions will show the method now in use: —

"Teach from the blackboard the words found in Munroe's Chart Primer. Read from the Franklin Primer, and from other books as supplied. Teach gradually the phonic and the alphabetic names of letters. Observe Prof. Munroe's 'Hints to Teachers' given in his First Reader, viz.: 'From the very beginning, children should be taught to speak in *pleasant* conversational tones; and the same tones are to be carried into their reading. To give ease and naturalness, nothing is more important than to read in *phrases*. Thus, 'I can see,' should be spoken as fluently as if it were one word, like 'repartee.' The articles *a* and *the* should always be joined to the following word, as if they formed the first syllable of it.

"The first steps in reading are to enable a child to recognize on the printed page words with which he is already familiar in speech. Every new word which occurs in any lesson is therefore to be taught him in conversation before he meets with it in type."

It will be noticed that reading is now first taught from the blackboard, the words found in Munroe's Chart Primer being selected for the lessons. After the child can read with facility sentences formed from these words, the new words on the first few pages of the different primers with which the schools are now supplied are taught, and then the printed page is brought into use. The primers referred to are the Franklin, a copy of which is owned by each scholar; the New Graded, the Graded, the Analytical, Sheldon's, Munroe's, Appleton's, and the Eclectic. These last, which are owned by the city, are put into packages of ten copies each and circulated in a systematic way through the schools; the plan being to group the schools into clusters of seven (the number of the different sets of primers used for supplementary reading), and to have the books carried forward in a given

direction, one school each week, thereby bringing each set of books to each school once in seven weeks. By this plan an abundant supply of reading of a given grade is secured, and scholars are not obliged to be constantly attempting to read what at the time is above the level of their comprehension. Reading should be taught so that words become to a child as doors ready to open at his pleasure into rooms filled with objects of interest, and not as doors locked upon him revealing nothing but the names painted upon them. To be sure, the names can be learned more quickly than the rooms can be carefully inspected, but they would be learned with little interest, and when learned would be of little profit.

The one thing to be kept constantly in view in teaching reading is to see that words bring to the mind the thoughts which sought expression in the words. As a means to accomplish this a great variety of questions should be asked, and I trust our teachers are awake to this fact.

The directions for the second class are as follows: "Use the Franklin Second Reader, and other books as supplied. Read from the blackboard daily." The same plan was contemplated for the second class as for beginners. But as yet no provision has been made for buying the books needed for supplementary reading. At the beginning of the new financial year it is hoped that the usual appropriation will be made, and the books at once provided. The use of the blackboard, as intended in teaching reading to this class, is deserving of notice. By it the teacher is enabled to obtain no inconsiderable amount of reading, additional to that from the reading-books, in a manner most likely to secure the best results. The plan was for the teacher, or a pupil who might deem it a privilege to be allowed to do it, to write daily upon the board, either before or after school, a story, or a part of it, for the first exercise of the next session. As the teacher would of course select only what was new and interesting, the scholars, as they took their seats, would be eagerly trying to make out what was written ; and the *trying* on the part of the scholar makes the exercise one of special value.

Another way, suggested by one of the teachers at a recent meeting, is to use the blackboard a part of the time in giving directions, and in answering questions. This is an excellent suggestion. Scholars are often able to read, and therefore seem

to know, what they do not understand; but they could not follow directions, or answer questions, unless they understood their meaning. To be sure, it would take more time for teachers to write what they have to say than to say it, but every moment while they were writing, the scholars would be learning to read. By this method many a dull boy would be quickened to effort, especially if teachers should occasionally grant favors to all who strictly complied with certain conditions, made known by the writing on the board.

In the Grammar Schools the whole of the Fourth Reader was assigned to the sixth class, instead of the first half as heretofore. This was done with the intention of giving to the fifth class the coming year the whole of whatever book may be selected for it. With the additional amount of reading for the Primary Schools and for the lower classes in the Grammar Schools, it is hoped that reading-books (such as are known by that name) will not be needed above the third class, and that the time which has been allotted to this kind of reading, with additional time secured by pruning other studies, will be given to the reading of interesting and profitable books. Not less than three hours a week should be devoted to this purpose.

We have in Cambridge a Public Library, and no doubt arrangements could be made with the Trustees by which a part of the books for this purpose could be obtained. This might lead to a more intimate and desirable connection between the Public Library and the Public Schools. If scholars become interested in the books thus brought to their notice, they might more frequently visit the library for other books of a similar character. That the wants of the schools might be kept before the Trustees, it would be desirable and eminently proper to have one member of the School Committee a member of that Board. The care, superintendence, and management of the Library is now vested in a Board of Trustees, consisting of one member of the Board of Aldermen, one member of the Common Council, and three citizens at large, the Mayor being also a member and chairman *ex officio*. No one of these trustees should be displaced, but if the schools are to be represented, an additional trustee should be chosen. This would require a change in the city ordinances relating to the library, but I am confident that the proposition, if made, would commend itself to the City Council.

What are Schools for?

The statutes relating to the establishment of schools and to the duties of teachers read thus: —

"In every town there shall be kept, for at least six months in each year, at the expense of said town, by a teacher or teachers of competent ability and good morals, a sufficient number of schools for the instruction of all the children who may legally attend public school therein, in orthography, reading, writing, English grammar, geography, arithmetic, drawing, the history of the United States, and good behavior. Algebra, vocal music, agriculture, physiology, and hygiene shall be taught by lectures or otherwise, in all the public schools in which the school committee deem it expedient.

"Any city or town may, and every city and town having more than ten thousand inhabitants shall, annually, make provision for giving free instruction in industrial or mechanical drawing to persons over fifteen years of age, either in day or evening schools, under the direction of the school committee.

"Every town may, and every town containing five hundred families or householders shall, besides the schools prescribed in the preceding section, maintain a school to be kept by a master of competent ability and good morals, who, in addition to the branches of learning before mentioned, shall give instruction in general history, book-keeping, surveying, geometry, natural philosophy, chemistry, botany, the civil polity of this Commonwealth and of the United States, and the Latin language. Such last-mentioned school shall be kept for the benefit of all the inhabitants of the town, ten months at least, exclusive of vacations, in each year, and at such convenient place, or alternately at such places in the town, as the legal voters at their annual meeting determine. And in every town containing four thousand inhabitants, the teacher or teachers of the schools required by this section, shall, in addition to the branches of instruction before required, be competent to give instruction in the Greek and French languages, astronomy, geology, rhetoric, logic, intellectual and moral science, and political economy.

"It shall be the duty of the president, professors and tutors of the university at Cambridge and of the several colleges, of all preceptors and teachers of academies, and of all other instructors of youth, to exert their best endeavors to impress on the minds of children and youth committed to their care and instruction, the principles of piety and justice, and a sacred regard to truth; love of their country, humanity, and universal benevolence; sobriety, industry, and frugality; chastity, moderation, and temperance; and those other virtues which are the ornament of human

society and the basis upon which a republican constitution is founded; and it shall be the duty of such instructors to endeavor to lead their pupils, as their ages and capacities will admit, into a clear understanding of the tendency of the above-mentioned virtues, to preserve and perfect a republican constitution, and secure the blessings of liberty, as well as to promote their future happiness, and also to point out to them the evil tendency of the opposite vices."

From these statutes it is apparent that the object for which schools are maintained is twofold, — *intellectual training* and *moral training*. Nor is the one more strongly enforced than the other; certain it is that the intellectual is not made paramount to the moral. This fact, I fear, has been lost sight of in too many schools, not in this city alone but all over the land. Nor is it strange, perhaps, that this should be the case. Success in teaching has been measured largely, if not wholly, by results of intellectual training; not because moral training has been deemed of less importance, but because the results could not be made apparent. Percentages of correct answers, while they may not show the best intellectual training, do to some extent indicate the ability of the teacher; but, as growth of character cannot be represented on paper, this element has not been sufficiently considered in estimating the value of teachers. Still by the statutes the obligation rests upon "all instructors of youth to exert their best endeavors to impress on the minds of children and youth committed to their care and instruction, the principles of piety and justice, and a sacred regard to truth;" and were there no statute the obligation would still rest upon them. We need in our country to-day men and women of integrity rather than of high intellectual attainment. Let it not then be forgotten that in our schools moral training has its place as well as intellectual training. I have introduced this subject with special reference to bringing to the notice of our teachers the views of the present Secretary of the Board of Education as expressed in his first annual report. He says: —

"The necessity of moral training makes the teaching of morals obligatory upon all who have any thing to do with forming the character of the young. The means to be used are good examples and right precepts; examples at first, and precepts with examples, after the mind has had experience sufficient to enable it to understand the language by which precepts are described. Whatever the teacher would have his pupils

become, in so far as moral character is concerned, he must himself be. If he would have them grow in honesty, he must himself live an honest life in their presence. Even young pupils are skilful in detecting the motives that control the teacher in the management of his school. Truthfulness or the want of it, is discerned in the records that are kept of attendance, of recitation, and of deportment.

"Honesty, or its opposite vice, may be revealed in the means employed to detect the violation of school rules; in contrivances connected with examinations; in a pretence to more knowledge than is possessed; in a failure to acknowledge mistakes, and in all those artifices which may be employed to set out the school in a favorable light. Example is the most powerful and satisfactory means of teaching to the young the facts and the excellence of a moral life. Young pupils are inclined to consider their teachers to be models worthy of unlimited imitation. They quote their sayings as authority, and refer to their acts as infallible guides in all similar cases. This relation is most favorable for producing those early impressions that are never effaced, and that give direction to future conduct and character to future life.

"During the time of study and of play, the teacher should observe the moral conduct of his pupil, and should lose no opportunity offered for training him to love that which is beautiful and true. A sound morality may be taught and made the basis of all moral conduct, and still no approach be made towards interfering in any way with the peculiar opinions that give rise to sects and parties. No teacher whose mind has been set free, by a liberal education, from prejudice and from an inclination to make forms superior to principles, will have any tendency to introduce into his moral teaching that which is not essential to good morals, nor to the fundamental principles of Christianity.

"The moral element in education must not be neglected by our teachers, for it is that which has given vitality to our institutions in the past, and it is that which alone can make them worth supporting in the future."

Years ago I listened to a lecture by Professor Huntington, now Bishop of Central New York, upon "Unconscious Tuition." It made a deep impression upon me at the time, and influenced my whole subsequent work as a teacher. The School Committee, in their report for 1857, wrote: "Let each master and mistress remember what Professor Huntington has so eloquently said of the teacher's unconscious moral influence over his charge." That lecture has recently been revised and republished in convenient form, and I commend it to the thoughtful perusal of every teacher.

School Hygiene.

In School Committee, Nov. 20, 1879, it was ordered that "The Principal of each school notify the Superintendent of Schools whenever, at fifteen minutes of nine A.M., during the time of keeping fires, the temperature of any schoolroom is 80° or higher, or 60° or lower." This order was introduced at my suggestion for the purpose of securing definite information as to the care exercised by the janitors in the heating of our schoolhouses. The results of the reports for the twenty days of school in December are as follows: Whole number of reports, sixty-two, of which nine showed a temperature of 60° or lower, and fifty-three of 80° or higher, seven of these being between 90° and 95°, and one being 114°. More than half of the reports were made during the first six days, and the number of those in the third week was less than that of the second, showing that good had been accomplished by calling the attention of the janitors, though indirectly, to the state of the rooms at a time when they were wholly responsible for their condition, having had, during the night and morning, the entire management of the registers, windows, and ventilators, as well as the cold-air boxes and the fires.

I know it is difficult to heat all the rooms of a building alike; the draught is affected by the state of the atmosphere, the direction of the wind, and other causes; still, with suitable dampers in the hot-air pipes, I believe that none of our schoolrooms need be heated to a temperature of from 10° to 44° higher than is required for comfort and health. Whatever affects unfavorably the health of teachers or scholars should be remedied, if possible. A few of our furnaces draw their supply of cold air from the halls of the building, and in some cases I have found the connection between the outer air and the furnace shut off by the janitor, and the air from the cellar used instead. The small size of most of our schoolrooms makes it imperative that the greatest care should be exercised in heating and ventilating them. In remodelling our schoolhouses it was not practicable in many cases to make the rooms of proper dimensions.

This whole subject of school hygiene is one of the greatest importance. "All that a man hath will he give for his life," and thousands, after they have lost their health, would give all that they have to regain it.

Four years ago a special committee was appointed to report on the sanitary condition of the schoolhouses. The services rendered by that committee were deemed so important that a standing committee on Schoolhouses and Hygiene was added to the committees of the Board. This committee has already been the means of bringing about many desirable changes; and it is hoped that their influence will be felt more and more, till the laws of health are better known and regarded. Last year, at the request of the Secretary of the Board of Education, Dr. D. F. Lincoln prepared and contributed to the Annual Report of the Board a paper entitled *Hygiene of Public Schools*. It is of great value, and the facts embodied in it should be known to all who are in any way connected with schools. The circulation of this Report being limited, I have thought it advisable to print in the Appendix such extracts from the paper as particularly relate to the sanitary conditions affecting both teachers and pupils in their daily work.

A Commercial School.

The statistics of the High School show that twenty-four per cent of the pupils who enter the school do not remain longer than one year; and that more than forty per cent of those who enter leave by the end of the second year. The question in my own mind is, whether this class of scholars could not, even to their own advantage, be brought together in a separate school, and thereby relieve the High School from all pressure as to numbers for several years to come. The High School building cannot be enlarged, according to the plans prepared several years ago, without an expenditure of at least thirty thousand dollars. The number of pupils now connected with the school does not warrant this outlay; at the same time the school is too much crowded for the most efficient work. The great majority of these pupils who remain only one or two years in the school do not enter it with any purpose of taking the full course; and this fact led to the establishment, some years ago, of the so-called Shorter English Course, which is regularly completed in three years. It will not be claimed, however, that this course is in all respects adapted to the wants of those who take it. It is simply such a modification of the first three years of the full course as could be made without seriously interfering with that course, and materi-

ally complicating the classification of the school. Its main features are the omission of Latin as a required study, and the introduction of elementary book-keeping; the other variations from the full course are of minor importance. It is at best a slight concession to the demand for a brief practical course supplementary to that of the Grammar School, and suited to the wants of the very large class of pupils, especially boys, who are looking forward to a mercantile or industrial life. One or two years is all that most of these pupils can afford to spend in school after leaving the Grammar School, and opportunities should be afforded them of spending it to the best possible advantage. It is evident that this cannot be done, either efficiently or economically, by additions to the Grammar School course or by slight modifications of the regular High School course. An independent course in a separate school is obviously better for the purpose; and I believe that such a school could be established with little or no addition to the aggregate expense of our educational system.

We have in the Felton Schoolhouse, which is centrally located (having been formerly occupied by the High School), ample accommodations for such a school. The course of study should cover a period of only two years, and the three years' course at the High School should be given up. It is probable that nearly all who enter upon this short course would complete it, and it is also probable that many who would not think of going to the High School would gladly avail themselves of the opportunity of graduating at the end of two years from a school of higher grade than a Grammar School. In the High School such pupils are in the lower classes, with little or no expectation of completing even the three years' course. All they can say when they leave, however well they may have done their work, is that they "have been in the High School." In the new school, on the other hand, they would from the first be looking forward to the successful completion of their work. In the ordinary classification of schools it is impossible to arrange a course of study which shall be the best for every pupil. The two principal difficulties are the difference in time scholars remain in school, and the different positions in life they are to occupy. These elements of difficulty, especially the first, would be less prominent in arranging a course of study for a school of this character, as no pupil would think of entering who intended to continue his studies in

schools of a higher grade. This course of study, then, would be arranged, not as foundation work for higher studies, but with special reference to doing the most that can be done in a given time to fit the pupil for the active duties of life. I will not attempt here to specify in detail what this course of study should be. Arithmetic in its practical applications, including a thorough course in book-keeping, should obviously be one of the studies. Reading for the purpose of becoming acquainted with the writings of the best authors, and also for the purpose of acquiring a taste for reading, should be prominent. The Constitution and civil institutions of our country would perhaps come next in importance; physiology and hygiene should have their place; while through the whole course the pen should be in frequent use in writing letters, business forms, and compositions. French or German, mechanics (and perhaps other branches of natural philosophy), and surveying, might possibly be added as elective studies. Such a course would differ from the shorter course in the High School, not so much in the studies included as in the proportion of time and attention allotted to some of them; especially to arithmetic, to reading, and to writing. Arithmetic, including the keeping of accounts and other practical applications, should, for instance, have as much time as is there given to book-keeping and algebra. Reading should be a daily instead of a weekly exercise, and composition a weekly instead of a monthly one. From first to last *science* should be made subordinate to *art*, and *theory* to *practice*. At every step, the pupil should be trained to be a *worker* rather than a student, or a student in order that he may be a worker, ready and skilful in using the knowledge he has acquired.

As I have stated, the cost of this school would be comparatively small. The number in the High School would be greatly diminished by taking out this class of pupils, while the classification would be simplified by giving up the Shorter English Course; so that one of the sub-masters could be spared for the mastership of the new school, and probably one of the female assistants could also be transferred to it. It is possible that one additional female teacher might be required for the new school; but this extra expense would be more than balanced by the interest on the cost of enlarging the High School building. Under the present organization of the school, this work cannot be long

postponed; with the relief that the establishment of the new school would afford, the building will doubtless be amply large for the purposes of the High School for the next ten years, if not longer.

It will be observed that I have suggested the name "Commercial School" for this proposed addition to our system of schools. I have done this because I believe that it would be better to give it an independent name than to connect it nominally with either the High School or the Grammar School. I have suggested this plan as one way by which the wants of the High School can be met. I have suggested it also because I believe that no other division of the school could be made without injury to its interests and a large increase in expense; while this division would be of advantage to both parts of the school and could be effected at little cost. Even as an experiment it would be easy and inexpensive, as no new building is required, and no inconvenience could arise from such a temporary division of the High School if it should be decided hereafter to return to the present organization.

I believe this plan meets a reasonable demand of the people, and obviates objections which have been made to our present gradation of schools. It is a prevalent impression in the community — less in Cambridge probably than in many places — that a High School is a costly affair, and that it does not fully accomplish the ends for which it was established. The very fact that nearly half the pupils leave within the first two years is quoted as evidence that the system is a partial failure. The shorter course is not generally accepted as a satisfactory one for boys who have a business life in view, and many of them are sent to the so-called "commercial schools" in Boston. It must be admitted that there are some grounds for this feeling that the High School does not perfectly fulfil its mission; but the fault is in the details of the system, not in the system itself. Would not the proposed change enable the High School to do better work in its appropriate field by removing a class of pupils for which its course of study is not suited and cannot well be made suitable; and would not these pupils find all their special wants fully met in the new field opened for them in the "Commercial School"? Without pressing the plan I commend it to your careful consideration as a possible solution of several perplexing problems.

Teachers' Meetings.

By the School Regulations it is the duty of the Superintendent "to hold stated meetings of the Grammar teachers, and also other stated meetings of the Primary teachers, once in each term, to advise them as to the best methods of instruction and management, and for this purpose he may dismiss their respective schools at such times as he may deem advisable, not exceeding one half-day for each term." I believe it would be for the interest of the schools that such meetings, somewhat changed in the manner of conducting them, be held more frequently. It is through teachers, and through them almost wholly, that schools can be improved. Courses of study may be changed, and the teaching remain substantially the same; orders relating to the management of schools may be passed by the Committee, and the letter only be obeyed while the spirit is disregarded. Teachers must be convinced that new methods are better than the old, or they will not use them with any probability of success. In no way will they be more likely to become enlisted heartily in any plan than by having a part in making that plan; and in no way will they be more likely to see the advantages of one method over another than by coming together to compare results, not in any spirit of rivalry but with a desire to learn. The character of the proposed meetings will be more clearly seen by the following outline of what might be the *Order of Exercises:* —

1. *Talk by the Superintendent* — upon whatever subject he thinks most important to bring before the teachers at the time.
2. *Report of Committees.* The plan contemplates the appointment of permanent and special committees, such as committees on *Course of Study* (a committee for each branch taught), on *Methods of Instruction*, on *Methods of Government*, &c.
3. *Discussion of the Reports.*
4. *A Paper by one of the Teachers.* Among other subjects, such as these might be presented: *Horace Mann and his work; Methods of Examination and Promotion; How can the Public Library and the Schools be best made to help each other?*
5. *An Exercise by Scholars.* A class or a part of a class could be present from one of the schools to show methods or results of teaching; or scholars selected by their teachers, one from each room of a given class, could show the *best* results in reading; drawing upon the blackboard

(including map-drawing); the addition of columns of figures; and other exercises.

6. *The Examination of Scholars' Work*—such as writing-books and drawing-books, or specimens of writing and drawing, and uncorrected compositions written in school upon subjects given by the teacher at the opening of the session.

The regular order of exercises could be occasionally set aside for lectures by practical educators. During the last year Hon. John W. Dickinson, Secretary of the Board of Education, and Mr. George A. Walton, Agent of the Board, were present at one of the meetings and addressed the teachers.

These meetings would awaken thought and lead to more careful consideration of educational questions. The tendency in any profession is to routine work; and especially is this true of the teacher. Many a one continues year after year in the same grade of schools, teaching over and over again a limited number of subjects. Such a person needs to have his mind directed to wider fields of contemplation. Then, as mountain streams impart freshness and increasing force to the river in its flow, so new thoughts, awakened by a sight of this more extended prospect, will infuse fresh life and spirit into the teacher's daily course of duty and of labor.

Miscellaneous.

Among the teachers that have resigned the past year, a larger number than usual have been those of marked ability. Two left for more desirable positions in schools of other cities; two others resigned because of ill health; while four of the number exchanged school duties for those of married life. One resigned after a service in the schools of Cambridge of more than thirty years. When I add that she was associated with me as head-assistant in the Putnam Grammar School for twenty years, it will not be deemed inappropriate that I speak of her more at length. Miss Sarah M. Burnham, having taught for two or three years in what was known as the Eastern Primary School, was appointed during the year 1848 a teacher in the Putnam Grammar School, which position she held till her resignation, June 1, 1879. Miss Burnham was a conscientious teacher. She did not allow, as is too often the case, outside attractions to engross her mind or tax her strength so as to unfit her for the daily work of school. Dur-

ing all these years, except when absent in Europe by permission of the School Committee, she was, almost without exception, at her post, efficiently discharging her duties. Not content with doing the ordinary daily work of school, — though she did this most thoroughly, — she sought to awaken in her pupils a desire for a wider range of studies. Her cabinet of minerals, the many books her scholars read, the drawings upon the blackboards, bear witness to the success of her efforts. Though her term of service was long, it was one of increasing value; and one of the secrets of this is, she was a constant student. No year was allowed to pass that she did not mark out for herself a definite plan of study. Miss Burnham carries into her retirement the respect and esteem of her many pupils, and of all who knew her intimately.

I desire to bear testimony to the faithfulness and efficiency of the truant officers. They not only perform the duties required by the statutes and by the school regulations, — and these are more varied and greater in number than the name *Truant Officer* would imply, — but they do many other things not required which are helpful to parents and a benefit to the schools. I believe many a boy is saved to the community through their instrumentality; I also believe that parents are beginning to realize the fact that the officers are true friends, seeking only the best interest of their children.

Since last September there has been an aggregate of forty-five weeks of absence on the part of teachers. Little or no difficulty is experienced in obtaining suitable substitutes in the Primary Schools, as the graduates of the Training School are familiar with that work. In the Grammar Schools, however, the case is different. The progress of classes is often seriously interrupted because efficient substitutes cannot be secured. The graduates of the Training School, by a vote of the Committee at their meeting in December, have now an opportunity of obtaining experience in the practical management of these schools; and if they avail themselves of this privilege, many of them will be able to fill these places acceptably, and in the end secure permanent appointments.

The Primary Schools in Ward Three require additional accommodations. So long ago as 1875 citizens of that ward petitioned the City Council for a new schoolhouse, to be located in the

vicinity of the lower part of Spring Street. At that time, as now, the schools were crowded; but the depression in business which soon followed, and the consequent closing of several manufacturing establishments, caused many families to remove from that section of the city; and in this way the schools found relief till last April, when it became necessary, for the want of another room, to use the entries in two of the buildings as recitation rooms, — an experiment which should not be tried another year. The Committee are referred to my report for 1875, and to the report on the "Sanitary Condition of the Schools," printed with the school report for 1876, for further information on this subject.

FRANCIS COGSWELL,
Superintendent of Public Schools.

VALEDICTORY ADDRESS

OF

HIS HONOR MAYOR MONTAGUE,

AT THE

LAST MEETING OF THE CITY GOVERNMENT OF 1879, DECEMBER 31, 1879.

Gentlemen of the City Council: —

In following a precedent which I find has been established by several retiring mayors, of reviewing the work of their administration, I do not propose to occupy too much of your time at this closing session, and only desire to give you the financial results of our two years' labors, the present financial condition of the city, and to mention a few matters that have claimed our attention during our term of office. It has not been my desire, and the results show that it has not been yours, to leave a record of any large expenditure to distinguish our administration, but rather to conduct the affairs of the city prudently and economically, in accordance with the expressed wish of the people at the time of our election. I shall confine my remarks to what has passed, avoiding as far as possible any recommendations which might tend to embarrass my successor, either in his administration or in the preparation of his inaugural address: —

Finance.

The total expenditure of the city, exclusive of funded and temporary loan for the year 1878, amounted to . . .	$1,297,469.51
„ „ 1879	1,217,619.34
Decrease in 1879	$79,850.17

The valuation of the real and personal estates of the city in 1878 was $49,615,140.00, a decrease of $6,139,810 from that of the previous year. Owing to this large decline in valuation the rate of taxation was fixed at $18 per $1,000. The valuation in 1879 was $49,238,098, a decrease of $377,042 from 1878; the rate of taxation was $17 per 1,000 with the usual 4 per cent discount, showing a decrease in the rate of $1.00 per $1,000 as compared with 1878.

There is no doubt that we have seen the last year of a decline in valuation, and that with renewed business prosperity we can reasonably expect a steady increase.

By referring to the Auditor's report for the financial year of 1878, it will be seen that there was a decrease in the gross debt of the city during that year of $37,945.13, and in the net debt during the same time of $312,091.04.

A comparison of the debt of 1878 with that of 1879 will show the following results: —

Total Gross Debt, November 30, 1878 and 1879:—

	1879.	1878.
Funded city debt	$3,254,000.00	$3,269,000.00
„ water debt	1,528,700.00	1,528,700.00
Trust funds	26,000.00	26,000.00
State and county taxes	42,501.52	59,886.52
	$4,851,201.52	$4,883,586.52
Decrease in the *gross* debt in 1879 . .	$32,385.00	

The means on hand for paying this gross debt, as compared with the same date in 1878, were, —

	1879.	1878.
Amount of general sinking funds . . .	$1,025,538.61	$828,699.05
„ water works „ . . .	353,468.02	291,955.46
Cash in the treasury . . . $61,305.57 Less bills audited but not paid 2,423.50	58,852.07	31,634.47
	$1,437,858.70	$1,152,288.98
Increase of means during 1879 . . .		$285,569.72

Comparison of Net Debt.

	1879.	1878.
The gross debt in 1879 and 1878, was .	$4,851,201.52	$4,883,586.52
Means for paying same	1,437,858.70	1,152,288.98
	$3,413,342,82	$3,731,297.54
Decrease in net debt during the year . .	$317,954.72	

The decrease in the gross debt in 1878, was	$37,945.13
„ „ „ „ 1879 „	32,385.00
Total in two years	$70,330.13

The decrease in the net debt in 1878, was	$312,091.04
„ „ „ „ 1879, „	317,954,72
Total in two years	$630,045.76

We found in the treasury at the commencement of the financial year of 1878 cash to the amount of $879.16; but we also found that, to leave this balance, the former administration had been obliged to borrow $20,000 to pay their maturing bills, which amount had to be paid out of the tax levy of 1878. The administration of this year leaves to its successor a balance in the treasury amounting to $58,852.07, to reduce the tax levy of 1880, making the condition of the treasury at the commencement of the financial year 1880 $77,972.91 better than it was at the commencement of 1878. When we take into consideration the fact that the valuation of the city is $6,516,882 less than it was in 1877, and that during the past year we have paid all our bills in cash, even to the construction account of the Water Works, and have not issued a single bond, and have also been able to reduce the rate of taxation one dollar on a thousand, I think that you all will agree that the result is very satisfactory.

The only bonds issued in 1878 were for the construction account of the Water Works, to the amount of $12,500. It has been the invariable custom, since the purchase of the works, to cover this account by the sale of bonds. A careful investigation of the accounts of the works in 1878 showed that the outstanding water bonds amounted to $22,728.06 more than the cost of the works. This had been brought about in

former years by selling bonds for the full amount of the appropriation, and before the actual amount expended was known, the difference between the amount of bonds sold and the expenditure not being credited to the appropriation of the following year. The Finance Committee of this year concluded that it was not right to issue any more bonds for this account until this balance was adjusted; consequently the amount appropriated for the construction account of the Water Works was paid in cash.

In collecting information for the Tax Commissioners of the State, it occurred to me that it would be a good opportunity to obtain an exact statement of the assets and liabilities of the city, or, in other words, to take and put on record a regular stock account. With this object in view the several committees and heads of departments have furnished me a detailed statement of all the property under their charge, belonging to the city, with its present estimated value. Thinking that this statement might be of interest to some, I have condensed the same, and herewith present it for your consideration, referring you for further information to the schedules which are on file in the Mayor's office.

A Statement of the Assets and Liabilities of the City of Cambridge, November 30, 1879.

ASSETS AVAILABLE.

Cash in treasury	$58,882.07
Amount of sinking-funds	1,025,508.61
„ „ „ of Water Works	353,468.02
Bills receivable secured by mortgage	5,231.00
Uncollected taxes, 1874 to 1879, inclusive	141,522.28
„ sewer assessments	390.09
„ grading „	29,161.59
„ nuisance „	40,831.24
„ State aid of 1878	14,985.87
„ „ 1879	11,911.00
„ military aid of 1879	2,768.76
Amount of corporation tax from State	26,133.14
„ national-bank tax from State	15,186.34
Uncollected water bills	3,019.19
„ miscellaneous bills	588.72
Amount carried forward	$1,729,587.92

Amount brought forward			$1,729,587.92
Surrendered estate account: —			
Buildings [1]		$31,850.00	
Land		147,331.53	
			179,181.53
Salable city lands			79,083.00
			$1,987,852.45

ASSETS UNAVAILABLE.

Water Works: —			
Total cost	$1,696,596.50		
Deduct for depreciation	186,400.00		
		$1,510,196.50	
Horses, wagons and other personal property		7,049.09	
Almshouse: —			
Buildings	$25,000.00		
Land	20,000.00		
Total	$45,000,00		
Horses, wagons, &c.	13,446.34		
		58,446.34	
Fire Department: —			
Buildings	$41,500.00		
Land	15,500.00		
Total	$57,000.00		
Horses and apparatus	45,077.95		
Fire-alarm telegraph	23,902.88		
		125,980.83	
Schoolhouses: —			
Buildings	$369,750.00		
Land	178,460.00		
Total	$548,210.00		
School furniture	28,056.50		
		586,266.50	
City buildings	$149,500.00		
Land	49,528.00		
Total	$199,028.00		
Furniture	6,318.75		
		205,346.75	
Amounts carried forward		$2,493,286.01	$1,987,852.45

[1] The difference between the figures herein given and those of the Auditor arises from the fact that the Auditor's figures represent the actual cost of the estates as paid by the city, and my figures are in accordance with the estimate of the committee on public property at this date.

Amounts brought forward	$2,493,286.01	$1,987,852.45
Police Department: —		
Telegraph, machines, and other personal property	2,746.00	
Lamp Department: —		
Posts, lanterns, and other personal property .	14,538.46	
Street Department: —		
Horses, carts and other personal property .	28,192.00	
Cambridge Cemetery: —		
Land available for burial, buildings, and other personal property	78,925.96	
Cemeteries: —		
Old burial ground, *nothing.*		
Common and public squares, *nothing.*		
Cambridge Public Library	14,000.00	
City Engineer's instruments, &c., in office .	1,551.48	
Sewers, $61\frac{272}{1000}$ miles, total cost $1,068,157.87		
Less 107,140.87		
	961,017.00	
Stock and tools	556.00	
Gravel pit at Belmont	4,000.00	
Wharf at Lower Port	7,000.00	
Parks and public squares, horse, wagon, trees and tools	475.00	
		3,606,287.91
		$5,594,140.36

LIABILITIES.

Funded loan	$3,254,000.00	
„ water loan	1,528,700.00	
State tax	17,385.00	
National-bank tax	5,832.83	
County tax	25,116.52	
Trustees Dowse Institute Fund	10,000.00	
„ Daniel White Charity	5,000.00	
„ Sanders Temperance Fund . .	10,000.00	
„ Cambridge Public Library (Fay Fund)	1,000.00	
One fourth amount liquor licenses to State.	3,876.50	
		4,860,910.85
Amount carried forward		$733,229.51

	Amount brought forward		$733,229.51
Less	amount of poll, personal, and real-estate taxes, 1874, 1875, 1876, and 1877, abated since November 30 .	$26,284.36	
„	nuisance and other assessments of doubtful value	40,831.24	
			67,115.60
	Balance of assets over liabilities .		$666,113.91

This statement shows a balance of assets over our liabilities of $666,113.91. The result is much more favorable than I had anticipated, and must convince every property-holder that there need be no apprehension of any creditor of the city levying upon the property of the individual while the public property and funds of the city are more than sufficient to meet all our obligations. The assets are classified under two heads, — available and unavailable. The available assets are such as can be applied to reduce our liabilities; the unavailable are such as are required for continuing the business of the city, and for this purpose are worth every dollar of their appraised value, and, with the exception of the sewers and a few other items, would be worth, for other purposes, nearly their appraisal.

The appraisal has been as thorough and careful as possible, with a disposition to under-estimate, rather than over-estimate. The committee on public property has devoted a great amount of time and labor in ascertaining the exact amount and actual value of all the public property of the city, and I feel under great obligation to that and other committees and heads of departments for their willingness to devote the time necessary to make the statement complete.

Water Supply.

Late in the year 1878 an order was passed by the City Council, in accordance with the recommendation of the Water Board, appointing the Mayor, President of the Common Council, President of the Water Board, City Solicitor, City Engineer, and City Physician, as a special commission, with power to employ experts to consider and report upon the petition of S. B. Rindge and a large number of other citizens, and also upon all questions affecting our water supply. The City Engineer immediately com-

menced his part of the work, by making the proper surveys, maps, plans, &c., of the territory, but it was not until the ground was free from snow and ice, in the spring, that the Commission was enabled to commence its investigations. Since then, with the assistance of the best experts it could obtain, the work has been actively continued, and it has given that time and thought to the subject which its importance seemed to demand, and has now made its report. I feel that the questions involved in this investigation are of vital importance to the interests of the city, not only in a financial point of view, but as affecting the health and prosperity of the city. The purity of the water should be insured beyond a question; but before any large expenditure is incurred, it should be clearly demonstrated that it would accomplish its object.

I think that any one who carefully reads the report and the evidence of the experts will become satisfied that the purity of Fresh Pond cannot be properly protected by the purchase of land, and, even if this could be done, there would still be grave doubts of its being for the interest of the city to make so large an expenditure as this would require, without stronger evidence than we now possess that the pond can be relied upon for a permanent supply. The taxable valuation of the land and buildings immediately bordering upon the pond amounts to $279,855; this does not include the so-called ice-rights, which no doubt would be considered very valuable in any attempt to purchase. The purchase of these estates would be only a commencement, as the Committee was unable to designate any reasonable limit where it would be safe to stop if we should once begin to buy the land.

It would seem that the true policy for the city to pursue would be to insure ample protection to the purity of the water at the least possible expense, in the mean time reducing the debt as now required by law, so that when the time comes when the supply is not equal to the consumption, the debt will be so small that a new debt can be created for a new supply, or the revenue from the works can be paid as an annual rental to Boston without adding to our annual tax.

Sewers.

In my inaugural address at the commencement of the present year I stated that it had been suggested that I should recom-

mend that a petition be presented to the legislature for the appointment of a commission to consider the whole question of the drainage of the territory now drained by Alewife Brook, but as the matter would receive the attention of the special committee on our water supply, I felt that any recommendation or action before that Committee had reported would be premature.

The Committee, after consulting with experts and the authorities of Boston and elsewhere, has, in my judgment, wisely concluded that the former plan of draining this territory into Mystic River should be abandoned, and that it should be carried through our own city to Charles River. One strong reason, in addition to those given by the Committee is, that it will provide drainage for a large portion of our city which is now without sewers, but which will eventually have to be provided for, and will form a new system of sewerage for this section, which, under the provisions of our new sewer ordinance, will, as this territory is brought into the market and developed, be gradually assessed, and a large part of the cost will, from time to time, be repaid into the treasury of the city; while, if the sewerage should be carried to the Mystic River, we should not only have on our hands two separate systems of drainage, to be carried at great expense to deep water, but the cost of construction would be nearly a dead loss to the city.

One of the most important measures which has had the consideration of the City Council during the past year is the present ordinance in relation to sewers, which was matured with great care by the efficient and able chairman of that committee. Thoroughly acquainted himself with the whole subject, he has succeeded, by intelligent explanation of his views thereon, in furnishing the City Council with valuable information which has brought unanimous adherence to his opinion upon the subject of sewer assessments, and the working of the new ordinance will undoubtedly prove of the highest benefit to the city.

The several departments of the city are in excellent condition, and are well managed. I have no special improvement to note in this connection, and will only say that they are all in charge of competent and faithful men, who have done all in their power to manage the departments under their charge honestly and economically.

The organization of a new Committee on Claims the past year, to which all claims against the city are referred, has proved a success, and I feel satisfied that it has been and will continue to be of great pecuniary benefit to the city.

The important work of revising the City Ordinances has been completed during the past year under the direction of the Committee on Ordinances, and it is to be congratulated upon having finished its work in so perfect and satisfactory a manner.

A matter of considerable importance to owners of real estate is the reduction of the water rates; this reduction of two dollars upon the first faucet in each house, and a corresponding reduction in houses occupied by more than one family will go into effect on the 1st of next July, when the annual bills become due. This was made by the City Council of the present year upon the recommendation of the Water Board, and undoubtedly would have taken place much sooner, if it had not been for the action of the City Council in previous years in reducing the amount paid by the city for fire hydrants.

A very satisfactory contract has been made by the Committee on Roads and Bridges for the delivery upon our streets, during the next six years, of all the gravel required for this department. The gravel is of a quality superior to any that we have ever used, and as the price is as low or lower than the city has paid for an inferior article, the action of the Committee received the unanimous approval of the City Council.

The quiet and good order of our city have been maintained by our efficient police. The system inaugurated by the Chief, of requiring the officers to collect and put on record evidence in cases of accident or injury on the streets, has been of great assistance to the City Solicitor and to the Committee on Claims, and will no doubt be continued and perfected. The experiment has been tried, without additional cost, of guarding, during the fruit season, the most exposed sections of the city by a mounted officer and has proved very successful. The change in the ordinances making the appointment of the Police permanent instead of an annual appointment, has received my hearty approval, as two years' experience has fully convinced me that the change will render the officers more independent and efficient in the discharge of their duties.

Settlements have been made with the owners of surrendered

estates to the amount of $13,511.85 in 1878, and $13,946.30 in 1879, amounting in all to $27,458.15, for which the money has been paid, and the estates added to the available assets of the city.

It is very satisfactory to be able to report an improvement in the health of the city during the present year, as shown by the decrease in the death-rate. The whole number of deaths in 1878 was 964, and in 1879, 883, showing eighty-one deaths less than in the previous year. We can congratulate our Board of Health that its efforts to improve the sanitary condition of the city have been followed by such satisfactory results.

In conclusion,—we assumed the duties of our office at a time of general business prostration. Capital and labor were equally unremunerative, and the burden of public and private debt pressed heavily upon us all. While the citizens of Cambridge were practising that private economy which reduced incomes demanded, they also required that the public funds should be disbursed in the same manner. This was the issue at the time of our election, and to this platform we stood severally and unitedly pledged. How far we have succeeded in fulfilling our pledges, with the aid of the few figures which I have given you this evening, we will leave our fellow-citizens to judge. Whatever we have done, that has met their approval, has not been the work of any one man, and no single individual is entitled to the credit: each one has, in his proper place, contributed to the result. If any mistakes have been made, I am willing to assume my full share of the responsibility for them.

We now find the situation entirely changed: the business interests of our country are again established upon a sound basis, capital is seeking new avenues for profit, the merchant, mechanic, and laborer are again receiving an adequate reward for their labor, and the future prosperity of our city never looked more hopeful. We now resign our trust to others, with the firm belief that whatever we have done that is commendable will be perfected; whatever mistakes we have made will be avoided; and that the citizens of Cambridge will give the same generous support to the administration of 1880 that has been given to ours.

Before closing my remarks I desire to tender to each and every one of you my hearty thanks for the uniform kindness and courtesy which you have shown towards me in all our official

relations, and for your support and co-operation in all questions affecting the interests of the city. This has rendered my duties a pleasure, and in the future I shall look back to my connection with the City Councils of 1878 and 1879, with very pleasant recollections.

SAMUEL L. MONTAGUE.

ORDINANCES PASSED IN 1879.

An Ordinance in Amendment of an Ordinance in Relation to Accounts and Finance.

Section 7 of the Ordinance in relation to Accounts and Finance is hereby amended by inserting after the word "Property," at the close of the twentieth line thereof, the words: "Fuel, — by the Committee on Fuel: *Provided*, however, that all bills for fuel ordered by the Overseers of the Poor shall first be approved by that Board."

[*Adopted April* 2, 1879.]

An Ordinance in Relation to Shades and Awnings.

SECTION 1. No canopy, awning, shade, shade-frame, or shade-curtain, unless constructed of cloth or canvas attached to an iron frame, securely fastened and supported from above, and not less than eight feet above the level of the sidewalk over which it is placed, shall hereafter be erected or maintained within the limits of any street without permission of the Board of Mayor and Aldermen.

SECT. 2. Any person violating this Ordinance, shall be liable to a fine not exceeding twenty dollars.

SECT. 3. The Ordinance in Relation to Shades and Awnings, approved Jan. 1, 1879, is hereby repealed.

[*Adopted April* 16, 1879.]

An Ordinance in Amendment of an Ordinance in Relation to the Fire Department.

Section 23 of the Ordinance in Relation to the Fire Department is hereby amended by striking out the words "one dollar" in the eleventh line, and inserting in place thereof the words "fifty cents."

[*Adopted April* 30, 1879.]

An Ordinance in Amendment of an Ordinance in Relation to Streets.

Section 17 of chapter twenty-five of the Revised Ordinances is hereby amended by adding after the word "situated," in the tenth line thereof, the words "No person thus licensed shall act thereunder until he has filed with the City Clerk a bond, with sufficient surety, satisfactory in amount to the Mayor and Aldermen, to indemnify the city from all loss and damage by reason of said removal.

[*Adopted May* 21, 1879.]

An Ordinance in Amendment of an Ordinance in Relation to the Dana Library.

Section 1. Section 1 of chapter six of the Revised Ordinances is hereby amended by striking out the words, "Dana Library" at the end of the second line, and inserting in place thereof the words "Cambridge Public Library."

Sect. 2. Section 8 of said chapter six is also amended by striking out the word "Dana" in the eighth line, and inserting in place thereof the words "Cambridge Public."

[*Adopted May* 28, 1879.]

An Ordinance in Amendment of an Ordinance in Relation to the Fire Department.

Section 1. The first and second sections of the Ordinance in Relation to the Fire Department, adopted Dec. 4, 1878, providing for the appointment or election of four Assistant Engineers, are hereby amended by striking out the word "four" and inserting in place thereof the word "three."

Sect. 2. This Ordinance shall take effect upon its passage.

[*Adopted June* 4, 1879.]

An Ordinance in Relation to State Aid.

Chapter 24 of the Revised Ordinances is hereby repealed.

[*Adopted July* 2, 1879.]

An Ordinance in Relation to the Payment for and Assessment of Sewers.

SECTION 1. Three fourths of the total cost of making each sewer hereafter constructed, together with a proportional part of the cost, not already assessed, of constructing other sewers through which said sewer discharges, shall be assessed according to law: *Provided,* that the total amount of all assessments certified for such sewers and discharging sewers shall not exceed three fourths of the cost thereof, nor more than three dollars for each running foot of said sewer; and *provided,* further, that no estate shall be assessed until it can be drained into the sewer, and that no estate shall be assessed more than once for the same benefit.

The remainder of the cost of such sewers and discharging sewers shall be borne by the city.

SECT. 2. In order to assist the Mayor and Aldermen to ascertain the proportional part to be assessed and certified according to law, the City Engineer shall prepare and submit to them an accurate account of the cost of making and repairing each sewer hereafter constructed, and of any other sewer of which the Mayor and Aldermen, or the standing committee on sewers and drains of that board, shall request such an account, together with a plan of assessment, showing in detail the estates deriving benefit therefrom, with their frontages and areas (within one hundred feet of the street or way), and the names of the owners thereof. He shall show on said plan three quarters of the cost of said sewer; and, after delineating on said plan such system of sewers as, in his judgment, will eventually discharge into this sewer, he shall estimate and enter thereon what proportion of the said three quarters of the cost should be reserved for assessment along such future sewers. He shall also enter on the plan a list of the sewers through which the said sewer discharges with an estimate of its just proportion of the charge, not already assessed, of such discharging sewers; and he shall enter on the plan the balance remaining after deducting the said proportion reserved from the said three quarters of cost, and shall add thereto the said proportion of the charge of said discharging sewers. The sum thus obtained shall be designated prominently on said plan, "The total sum to be divided proportionally among estates benefited, according to law."

SECT. 3. He shall prepare and submit to the Mayor and Alder-

men a schedule, dividing the total sum shown on the plan provided by section 2 according to the following method: Four tenths of the benefit according to the relative frontage of each estate on the street or way where the sewer is, and six tenths according to the relative area of each estate within one hundred feet of such street or way. The area of corner lots shall be measured to the line bisecting the angle formed by the street lines.

SECT. 4. The amounts assessed and certified by the Mayor and Aldermen shall be entered upon the plan prepared for assessment.

SECT. 5. Plans and descriptions of all main drains and common sewers belonging to the city, with a true record of the charges of making and repairing the same, and all assessments therefor, shall be kept in the rooms occupied by the City Engineer. Said rooms shall be, for the purposes of this ordinance, a part of the office of the City Clerk.

SECT. 6. Section 5 of an Ordinance in Relation to Sewers, approved May 22, 1875, is hereby repealed.

SECT. 7. Chapter 249, Acts of the year 1878, is hereby adopted.

[*Adopted Nov.* 19, 1879.]

The Revised Ordinances were adopted Dec. 31, 1879, and all ordinances passed by the City Council before that date were thereby repealed.

MAYORS

OF

THE CITY OF CAMBRIDGE

FROM 1846 TO 1880.

James D. Green,	from May,	1846,	to April,	1848.
Sidney Willard,	„ April,	1848,	„ April,	1851.
George Stevens,	„ April,	1851,	„ April,	1853.
James D. Green,	„ April,	1853,	„ April,	1854.
*Abraham Edwards,	„ April,	1854,	„ January,	1855.
Zebina L. Raymond,	„ January,	1855,	„ January,	1856.
John Sargent,	„ January,	1856,	„ January,	1860.
†James D. Green,	„ January,	1860,	„ July 24,	1861.
‡Charles Theo. Russell,	„ July 31,	1861,	„ January,	1863.
George C. Richardson,	„ January,	1863,	„ January,	1864.
Zebina L. Raymond,	„ January,	1864,	„ January,	1865.
J. Warren Merrill,	„ January,	1865,	„ January,	1867.
Ezra Parmenter,	„ January,	1867,	„ January,	1868.
Charles H. Saunders,	„ January,	1868,	„ January,	1870.
Hamlin R. Harding,	„ January,	1870,	„ January,	1872.
Henry O. Houghton,	„ January,	1872,	„ January,	1873.
Isaac Bradford,	„ January,	1873,	„ January,	1877.
Frank A. Allen,	„ January,	1877,	„ January,	1878.
Samuel L. Montague,	„ January,	1878,	„ January,	1880.
James M. W. Hall,	„ January,	1880.	Now in office.	

* Municipal year changed. † Resigned.

‡ First elected by the City Council.

GOVERNMENT

OF

THE CITY OF CAMBRIDGE.

1880.

MAYOR.

HON. JAMES M. W. HALL.

ALDERMEN.

GEORGE R. BRINE,
GEORGE D. CHAMBERLAIN,
FRANCIS L. CHAPMAN,
MICHAEL CORCORAN,
BENJAMIN F. DAVIES,
HENRY H. GILMORE,
NATHAN G. GOOCH,
MOSES G. HOWE,
EDWARD T. NICHOLS,
DANIEL R. SORTWELL.

Aldermen, by Wards.

Ward 1.	Aldermen CHAPMAN and GOOCH.
„ 2.	Alderman GILMORE.
„ 3.	Aldermen BRINE, DAVIES, and SORTWELL.
„ 4.	„ CHAMBERLAIN and NICHOLS.
„ 5.	„ CORCORAN and HOWE.

Clerk.

JUSTIN A. JACOBS.

COMMON COUNCIL.

CHARLES WALKER, *President.*

SAMUEL W. BAILEY,	GEORGE W. GOODNOW,
CORNELIUS G. H. BENNINK,	SAMUEL S. HAMILL,
GEORGE C. BENT,	WILLIAM A. HAYES, Jr.,
JOHN CONLAN,	JAMES M. HILTON,
GEORGE A. DAVIS,	FREDERICK H. HOLTON,
WILLIAM H. DODGE,	WILLIAM L. LATHROP,
SANFORD H. DUDLEY,	ISAAC A. NAY,
WILLIAM B. DURANT,	HENRY K. PARSONS,
JOHN L. FAHY,	JOHN READ,
ALFRED FITZPATRICK,	CHARLES WALKER.

Common Council, by Wards.

Ward 1. Messrs. DURANT, HAYES, HILTON, and READ.
„ 2. „ BENNINK, BENT, DAVIS, GOODNOW, HOLTON and NAY.
„ 3. „ BAILEY, CONLAN, FAHY, and HAMILL.
„ 4. „ DODGE, FITZPATRICK, LATHROP, and WALKER.
„ 5. „ DUDLEY and PARSONS.

Clerk.

J. WARREN COTTON.

Page.

WILLIAM PEARSON.

CITY CLERK.

JUSTIN A. JACOBS.

ASSISTANT CITY CLERK.

WALTER W. PIKE.

CITY MESSENGER.

FRANCIS L. PRATT.

COMMITTEES OF THE CITY COUNCIL.

Joint Standing Committees.

On Finance.

	Common Council.
The MAYOR.	The President.
	Isaac A. Nay.
	John Read.
Aldermen.	George C. Bent.
Daniel R. Sortwell.	John Conlan.
Nathan G. Gooch.	Sanford H. Dudley.

On Public Instruction.

Aldermen.	Common Council.
Moses G. Howe.	The President.
George R. Brine.	William A. Hayes, Jr.
	William H. Dodge.
	Samuel W. Bailey.

On Ordinances.

Aldermen.	Common Council.
Moses G. Howe.	William A Hayes, Jr.
Henry H. Gilmore.	John Conlan.
	William L. Lathrop.

On Accounts.

Aldermen.	Common Council.
Henry H. Gilmore.	William B. Durant.
George D. Chamberlain.	Frederick H. Holton.
	William L. Lathrop.

On Public Property.

Aldermen.	Common Council.
Edward T. Nichols.	George W. Goodnow.
Michael Corcoran.	James M. Hilton.
	Samuel S. Hamill.

On the Almshouse.

Aldermen.	Common Council.
George R. Brine.	George A. Davis.
Moses G. Howe.	John Read.
	John L. Fahy.

On Roads and Bridges.

Aldermen.	Common Council.
Francis L. Chapman.	Henry K. Parsons.
Benjamin F. Davies.	George W. Goodnow.
	Samuel S. Hamill.

On Fuel.

Aldermen.	Common Council
Benjamin F. Davies.	John Read.
Nathan G. Gooch.	George A. Davis.
	Samuel W. Bailey.

On Lamps.

Aldermen.	Common Council.
Benjamin F. Davies.	Isaac A. Nay.
Moses G. Howe.	John L. Fahy.
	William H. Dodge.

On Printing.

Aldermen.	Common Council.
Michael Corcoran.	James M. Hilton.
George D. Chamberlain.	Frederick H. Holton.
	William L. Lathrop.

On the Fire Department.

Aldermen.	Common Council.
Francis L. Chapman.	Cornelius G. H. Bennink.
Henry H. Gilmore.	Henry K. Parsons.
	Alfred Fitzpatrick.

On City Engineering.

Aldermen.	Common Council.
George R. Brine.	George C. Bent.
Edward T. Nichols.	William A. Hayes, Jr.
	Alfred Fitzpatrick.

On Assessors' Department.

Alderman.	Common Council.
Daniel R. Sortwell.	John Conlan.
	George C. Bent.

On Claims.

	Common Council.
The Mayor.	William H. Dodge.
	William B. Durant.
Aldermen.	
Nathan G. Gooch.	Cornelius G. H. Bennink.
George D. Chamberlain.	John Conlan.
Henry H. Gilmore.	Sanford H. Dudley.

Special Committee of Board of Aldermen.

On Soldiers' Aid.

Edward T. Nichols. Benjamin F. Davies.
Henry H. Gilmore. Francis L. Chapman.
Michael Corcoran.

Standing Committees of the Board of Mayor and Aldermen.

On Police.

The Mayor. Daniel R. Sortwell.
George D. Chamberlain. Michael Corcoran.

On the Fire Department.

Francis L. Chapman. Henry H. Gilmore.
Edward T. Nichols.

On Roads and Bridges.

Francis L. Chapman. Benjamin F. Davies.
Edward T. Nichols.

On Sewers and Drains.

Michael Corcoran. Moses G. Howe.
Francis L. Chapman.

On Licenses.

Moses G. Howe. Benjamin F. Davies.
Edward T. Nichols.

On Health.

Benjamin F. Davies. Moses G. Howe.
George R. Brine.

On Bonds.

George R. Brine. Nathan G. Gooch.
Daniel R. Sortwell.

On Claims.

The Mayor. George D. Chamberlain.
Nathan G. Gooch. Henry H. Gilmore.

Standing Committees of the Common Council.

On Elections and Returns.

Samuel S. Hamill. Frederick H. Holton.
Henry K. Parsons.

On Bills in the Second Reading.

William B. Durant. Samuel W. Bailey.
George A. Davis.

On Enrolled Ordinances.

Sanford H. Dudley. Isaac A. Nay.
Alfred Fitzpatrick.

Clerk of Committees.

John McDuffie.

Board of Health.

Henry P. Walcot, *City Physician.*
George F. Piper. Daniel H. Thurston.

Health-Officer.

Alfred F. Holt, M.D.

Assistant City Physician.

Obed C. Turner, M.D.

Health-Officers.

Frederick W. Hagar. Amos Jones.
Timothy Ames. Leonard Shackford.
Warner W. Simonds. Thomas D. Cook.
Andrew G. Smith. Charles B. Jones.

Surveyors of Highways.

The same persons who compose the Board of Mayor and Aldermen.

Auditor of Accounts.

Samuel E. Chandler.

Treasurer.

William W. Dallinger.

Assessors.

Andrew J. Green. Edmund B. Whitman.
Artemas Z. Brown.

Assistant Assessors.

Thomas Stearns. Francis H. Stickney.
John S. Pollard. Joseph Whittemore.
Oliver B. Campbell.

School Committee.

James M. W. Hall, Mayor, *ex officio, Chairman.*

Ward I.

John Wilson. Andrew P. Peabody.
Horace E. Scudder.

Ward II.

Sumner Albee. James H. Hall.
Phebe M. Kendall.

Ward III.

George A. Coburn. Otis S. Brown.
John O'Brien.

Ward IV.

William H. Orcutt. Asa P. Morse.
Sarah S. Jacobs.

Ward V.

William A. Start. Edmund H. Stevens.
William Fox Richardson.

Secretary.

W. W. Wellington.

Superintendent of Schools.

Francis Cogswell.

Overseers of the Poor.

The Mayor, *ex officio, Chairman.*

Sumner Albee. George D. Chamberlain.
Jonas C. Wellington. Ezra Parmenter.
Charles E. Vaughan.

Clerk.

David P. Muzzey.

Warden of the Almshouse.

William E. Hough.

Physician of the Almshouse.

Henry P. Walcott, (*City Physician*).

Cambridge Cemetery.

Commissioners.

The Mayor, *ex officio.*

George S. Saunders. John M. Tyler.
George T. Gale. Curtis Davis.
William Page. Silas B. Buck.

Superintendent.

James K. Farwell.

Trustees of Cambridge Public Library.

The Mayor, *ex officio, Chairman.*

Alderman.

Moses G. Howe.

Common Council.

Isaac A. Nay.

Citizens at Large.

Edward P. Tucker. John S. March.
Hersey B. Goodwin.

Librarian.

Miss Almira L. Hayward.

Secretary.

John S. March.

Cambridge Water-Board.

The Mayor, and President of the Common Council, *ex officio.*

George P. Carter, *President.*
Knowlton S. Chaffee.
J. Warren Merrill.
Chester W. Kingsley.
Henry L. Eustis.

Clerk.

Justin A. Jacobs.

Superintendent of Water-Works.

Hiram Nevons.

Water Registrar.

J. Warren Cotton.

Trustees of Sinking-Fund of Water-Loan.

The Mayor, City Treasurer, and President of the Common Council.

Commissioners on Sinking-Funds of the City.

John M. Tyler.
Robert Douglass.
Frank A. Allen.
Joseph A. Holmes.
Charles H. Saunders.
Knowlton S. Chaffee.

Trustees of the Sanders Temperance Fund.

The Mayor, and President of the Common Council, *ex officio.*

Alderman.

Nathan G. Gooch.

Common Council.

George A. Davis.
John Conlan.

Trustees of the Bridge Charitable Fund.

The Mayor, and President of the Common Council, *ex officio.*

Alderman.

George D. Chamberlain.

Trustees of the Dowse Institute.

The Mayor, and President of the Common Council, *ex officio.*
William W. Wellington. William A. Bullard.
Frank A. Allen.

Representatives in General Court.

Thomas W. Higginson. James H. Sparrow.
George W. Park. A. Carter Webber.
Henry J. Wells. John McSorley.

Police-Court.

Standing Justice.

John S. Ladd.

Special Justices.

Henry W. Muzzey. Woodward Emery.

Clerk.

Thomas McIntire.

City Solicitor.

John W. Hammond.

City Engineer.

William S. Barbour.

Commissioner on West Boston, Craigie's, and Prison-Point Bridges.

Ezra Parmenter.

Superintendent of Streets.

Bainbridge W. Woodard.

Superintendent of Lamps.

Benjamin F. Nourse.

Board of Engineers.

Chief Engineer.

Thomas J. Casey.

Assistant Engineers.

First Assistant	Richard F. Tobin.
Second Assistant	Nathaniel W. Bunker.
Third Assistant	Charles W. Brackett.

Secretary of the Board.

Nathaniel W. Bunker.

Police Department.

Chief of Police.

Frederick W. Hagar.

Captains of Police.

District I.

Timothy Ames.

District II.

George H. Copeland.

District III.

Warner W. Simonds.

Captain of Night Police.

Mark J. Folsom.

Sergeants of Police.

District I.

Thomas D. Cook.

Andrew Sproul.

District II.

William Twist.

Lothrop J. Cloyes.

District III.

William Mullett.

John F. Murray.

Policemen.

Andrew G. Smith.
George A. Marston.
James Miller.
Leonard Shackford.
David A. Stevens.
Edward F. Belcher.
Luther Hapgood.
Simon D. Hiscock.
Thomas H. Lucy.
George S. Dudley.
Benjamin F. Higgins.
Daniel Callahan.
Dennis Corcoran.
Moses W. Hooper.
Amos Jones.
Patrick Doyle.
Frederic B. Pullen.
Alonzo S. Harriman.
Thomas W. Penney.
William Evans, jun.
Charles A. Brown.
Hugh McNamee.
Timothy Corcoran.
Charles B. Jones.
James E. Murray.
Thomas S. Hall.
William Nickelson.
Lawrence J. Ducey.
Michael A. Dalton.
James S. Alexander.
Frank W. Scobey.
William Hawkins.
Warren A. Eaton.
Otis Dennison.
John W. Skelley.
Charles W. Priest.
Lewis A. Thurston.
Charles L. Pike.
Joseph H. Furbush.
William Gallagher.
Edward Brady.
Matthew R. Moore.

Policemen (without pay).

P. H. Raymond.
Thomas J. Casey.
Thomas H. Eames.
John Coffee.
Joseph A. Pike.
Eben Pratt.
James F. Dunn.
Roland Litchfield.
Charles L. Russell.
G. C. W. Fuller.
J. L. P. Ackers.
James C. Wilder.
Thomas McIntire.
James K. Farwell.
Hiram Nevons.
William Collins.
John C. Driscoll.
C. McArthur.
George T. Barrington.
Benjamin J. Peirce.
Bernard J. Roper.
Patrick Murphy.
Patrick Conners.
Francis M. Mason.
Moses M. Child.
Benjamin McIlvaine.
Abel F. Thurston.
Frank E. Balch.
Josiah C. Smith.
R. O'Connell.

George Smyth.
Samuel F. Hunt.
Patrick Dunnigan.
Augustus W. Melvin.
William H. Grieves.
Joshua S. Sanborn.
John Ring.
Dennis Murphy.
Christopher Mullen.
Martin V. Langley.
Henry L. Hale.
Edward Patchett.
George W. Tower.
William H. Bates.
Alexander A. Barker.
William N. Porter.
George F. Jennings.
John H. Menard.
Daniel R. Melcher.
Frank J. Curtis.
Benjamin F. Livingston.
Charles A. Gay.
James W. Lovering.
George B. Lothrop.
Richard F. Tobin.
Joseph Collins.
Michael Ginty.
Dennis Murphy.
Nathaniel W. Bunker.
Charles W. Ash.
George D. Eaton, jun.
Thomas Montgomery.
William Wilson.
Ferdinand N. Buffum.
Maurice Murphy.
Edward H. Howe.
John Fitzgerald.
Samuel S. Morgan.
John W. Richmond.
Appleton Hubbard.
William A. Norris.
John Loughrey.
Thomas Cowan.
Noah M. Cofran.
Alex. F. Shepherd.
William Hunnewell.
William T. Gibson.
Francis A. Osborn.
Lewis Pratt.
Charles W. Brackett.
Walter H. Cox.
Moses Dudley.
Patrick Corcoran.
William E. Hough.
Henry L. Emerson.
Francis L. Pratt.
William H. McMenimen.
Thomas M. Howard.
Edward M. Williams.
Thomas J. Sanders.
Ambrose H. Clark.
Charles E. Littlefield.
William Foster.
John Little.
William Clark.
John Collier.
Edward Richardson.
Patrick F. Murray.
Elijah Wilson.
Frederick L. Ladd.
George F. Jennings.
James W. Wright.
Fred. W. Hagar, jun.
Martin J. Hannon.
Abel E. Long.
John J. Ryan.
George W. Greenleaf.

Keeper of Lock-ups.

Frederick W. Hagar.

Truant-Officers.

Moses M. Child. John Collier.
Francis M. Mason.

Constables.

Frederick W. Hagar.
William Twist.
John C. Burdakin.
Thomas McIntire.
Frederick A. Lull.
Thomas T. Ferguson.
Timothy Ames.
Michael S. Busnach.
William A. Taylor.
Charles H. Hunnewell.
Charles B. Jones.
George L. Cade.
Charles J. Adams.
James F. Jefferds.
Charles L. Russell.
James I. Murphy.
George L. Mitchell.
John Lennon.
Thomas J. Stevens.
John R. Fairbairn.
Dennis D. McCarthy.
Mark J. Folsom.
John Good.
Frederick H. Seavey.
William Dallinger.
Warner W. Simonds.
Amos Jones.
Augustus P. Griffing.

Superintendent of Burial-Ground.

Ward I.

Benjamin F. Wyeth.

Undertakers.

Benjamin F. Wyeth.
Roland Litchfield.
Samuel F. Hunt.
Thomas Devens.
John W. Coveney.
Judson Litchfield.
James Kernan.
William Casey.
C. Henry Lockhart.
William A. Taylor.
Horace D. Litchfield.
James E. Rourke.

Auctioneers.

Samuel F. Rugg.
Thomas T. Ferguson.
Edward Burnham.
Enoch H. Wakefield.
Frederick A. Lull.
Ira Taylor.
Daniel A. Buckley.
John Sargent.
H. A. Brown.
Edmund E. Sanborn.
John R. Fairbairn.
Jeremiah W. Coveney.
John Lennon.
William A. Munroe.
Thomas J. Stevens.

Fence-Viewers.

George B. Lothrop.
Abel Stevens.

Field-Drivers.

Thomas D. Cook.
Andrew Sproul.
Andrew G. Smith.
George A. Marston.
Lothrop J. Cloyes.
James Miller.
Leonard Shackford.
Daniel Callahan.
John LeBarron.
Frederic B. Pullen.
Albert D. Cleveland.
Henry M. Tyler.
Alonzo S. Harriman.
Thomas W. Penney.
William Evans, jun.
Hugh McNamee.
Benjamin F. Bridden.
James H. Parks.
George Wood.
Luther Hapgood.
Simon D. Hiscock.
Rufus S. Downe.
Thomas H. Lucy.
David A. Stevens.
Charles B. Jones.
James E. Murray.
Thomas S. Hall.
William Nickelson.
Lawrence J. Ducey.
Michael A. Dalton.
James S. Dailey.
James S. Alexander.
William Mullett.
Dennis Corcoran.
Moses W. Hooper.
John F. Murray.
Matthew R. Moore.
Amos Jones.
David N. McCleary.
Warren A. Eaton.
John W. Skelley.
George H. Copeland.
William Twist.
Charles A. Brown.
Patrick Doyle.
Charles S. Dixon.
George S. Dudley.
Frank W. Scobey.
William H. Batchelder.
William Hawkins.
Edward F. Belcher.
Timothy Corcoran.

Measurers of Wood and Bark.

John R. Taylor.
William H. Hood.
Herbert T. Lawrence.
Thomas H. Matthews.
Benjamin J. Hoyt.
J. Henry Wyman.
Frederick H. Lewis.
P. T. Clark.
Nathaniel L. Allen.

Pound-Keepers.

Elisha S. Woodward.
Thomas D. Cook.
William Twist.

Fish-Officers.

Frank A. Allen.
Walter S. Swan.
Charles E. Raymond.

Hay-Weighers.

Timothy Sullivan.
William H. Dodge.
Nathaniel Allen.
Joshua S. Sanborn.

Coal-Weighers.

James F. Jefferds.
Thomas H. Matthews.
John E. A. Mulliken.
Patrick Kelley.
J. Henry Wyman.
Jones Valentine.
Alfred H. Wellington.
Joshua S. Sanborn.
Herbert T. Lawrence.
Leonard Bacon.

Weigher of Boilers and Heavy Machinery.

Joshua S. Sanborn.

Sealer of Weights and Measures.

Benjamin F. Nourse.

Weighers.

Joseph W. Averill.
Patrick Dunnigan.
James H. Reardon.
Nathan H. Holbrook.
Henry Hooker.
Robert S. Paine.
George W. Wright.
Alvin M. Haines.
Henry James.
George W. Barnes.
John Reardon, jun.
Joshua S. Sanborn.
Thomas Ralph.

Inspector of Milk.

John H. Farrell.

Surveyors of Mechanics' Work.

William S. Barbour.
William A. Mason.
John S. Pollard.
Arthur Hodges.

Measurers and Surveyors.

E. F. Young.
Henry L. Hale.

Inspector of Charcoal Baskets.

Benjamin F. Nourse.

Measurer of Grain.

Benjamin F. Nourse.

Inspectors of Junk-Shops.

Frederick W. Hagar.
Amos Jones.
Charles B. Jones.
Mark T. Folsom.
William F. Batchelder.

Ward-Officers.

Ward I.

WARDEN.
Edmund Miles.

CLERK.
John Gorman.

INSPECTORS.
George Allen.
George T. Barrington.
James A. Martin.

Ward II.

WARDEN.
Charles R. Patch.

CLERK.
P. Allen Lindsey.

INSPECTORS.
Edward W. S. Jones.
Horace G. Kemp.
Dwight M. Turner.

Ward III

WARDEN.
Daniel B. Shaughnessey.

CLERK.
Silas E. Buck.

INSPECTORS.
James E. Doyle.
William J. Breen.
William A. Stevens.

Ward IV.

WARDEN.
Isaac S. Pear.

CLERK.
Frank H. Teele.

INSPECTORS.
John Locke.
William R. Mitchell.
George C. Howlett.

Ward V.

WARDEN.
Charles L. Fuller.

CLERK.
George T. Presby.

INSPECTORS.
Sylvanus G. Griffin.
Joseph Newman.
James Roper.

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